

May 1947

TECHNOLOGY REVIEW


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technology review

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ELIMINATE ASSEMBLIES
and
RESULTANT MACHINING COSTS

USE NON-FERROUS
FORGINGS

by

THE
HARVEY

METAL CORPORATION

HAROLD B. HARVEY '05 • *Engineers & Manufacturers* • SHERRY O'BRIEN '17

74th STREET and ASHLAND AVENUE • CHICAGO 36, ILLINOIS

FORGINGS IN ALUMINUM • BRASS • BRONZE • COPPER • MAGNESIUM • MONEL • ALLOYS

MACHINING FACILITIES

***17**

Industrial Workers Will Lose the Sight of One or Both Eyes TODAY

**AN ALARMING
COST
TO INDUSTRY
Yet Almost Wholly
PREVENTABLE**

*U. S. DEPT. OF LABOR ESTIMATE

Of the 17 serious eye accidents in industry that will happen in the next 24 hours, 16 could be prevented *now* by use of safety goggles. Eye accidents are estimated to cost industry \$5 per shop worker per year—

an alarmingly high figure. Yet, according to the Society for the Prevention of Blindness, 98% of eye accidents can be prevented by the use of safety goggles—at an average cost of only \$1.50 a pair.

Are *you* overlooking this opportunity to effect a substantial cost reduction? If so, we suggest you get in touch with your nearest AO Safety Representative for advice and help in establishing an adequate eye-protection program in your plant.



American Optical



COMPANY

*Safety
Division*

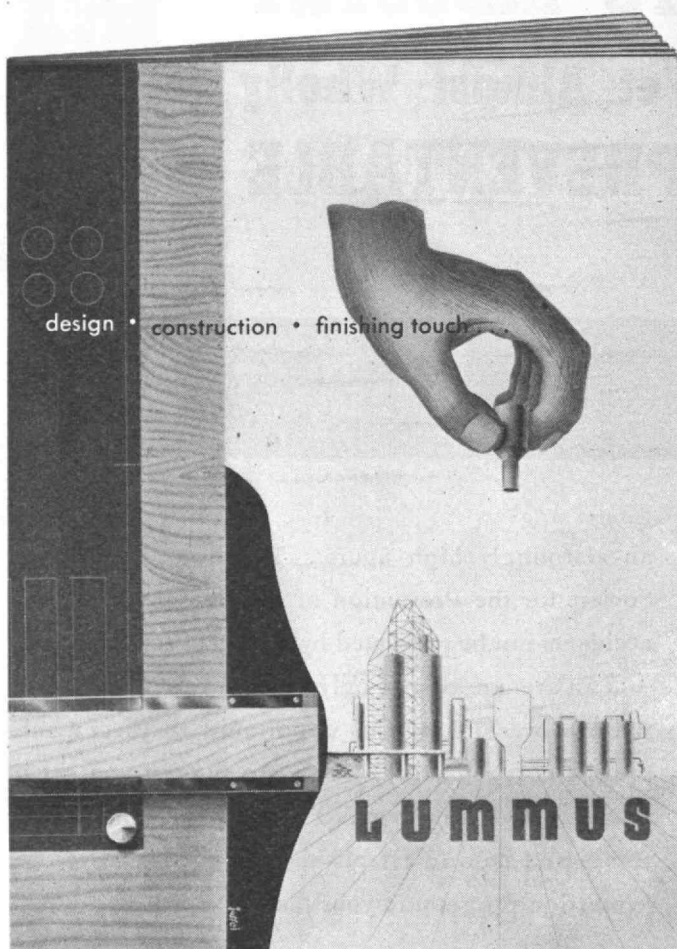
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...on petroleum
refining processes

contains 64 pages
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for petroleum refiners
and chemical manufacturers



With text, data, photographs, and 22 flow diagrams, this tenth refinery publication of The Lummus Company describes the latest processes and plants for the manufacture of gasoline—lube oils and waxes—petroleum chemicals. It defines Lummus services, facilities, and world-wide experience in design, construction, and supervision of petroleum and chemical plants.

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Including the Sensational
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NORTON ABRASIVES

Arnold presents:

CAST ALNICO I

CAST ALNICO II

CAST ALNICO III

CAST ALNICO IV

CAST ALNICO V

CAST ALNICO VI

CAST ALNICO XII

SINTERED ALNICO

*another step towards a
complete line of permanent
magnet materials*

SINTERED ALNICO

In general SINTERED ALNICO MAGNETS do not compete with, but rather supplement, magnets produced by the cast method to widen the scope of potential permanent magnet applications.

Alnico magnets weighing roughly one ounce or less should be produced by the sintered method.

Heavier magnets of more intricate shapes can be produced. For some applications Sintered magnets are more economical because:

1. Magnetic characteristics are practically the same as Cast Alnico.
2. Sintered Alnico is a fine-grain, homogeneous material which has more uniform flux density, is easier to grind, and provides better surface finish.
3. Sintered Alnico magnets can be produced to closer dimensional tolerances:

SINTERED ALNICO II

0.000 to 0.125	— + .005
0.126 to 0.625	— + .010
0.626 to 1.250	— + .015
1.251 to 3.000	— + .062

CAST ALNICO II

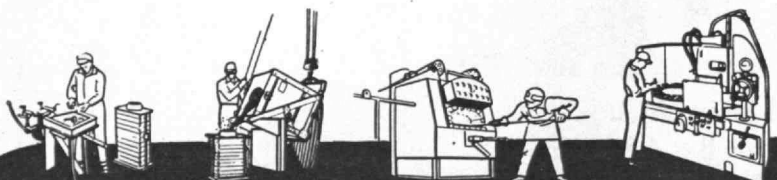
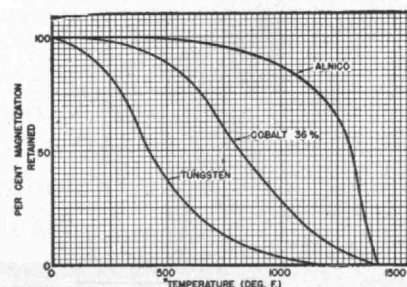
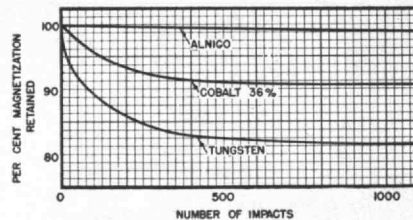
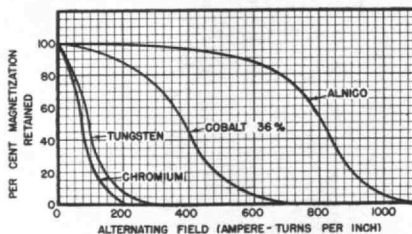
0.000 to 2.00	— ± 1/64
2.0 to 4.0	— ± 1/32
4.0 to 6.0	— ± 3/64

Grinding can in many applications be eliminated.

4. More intricate shapes, including holes, inserts, etc., are more feasible.
5. Transverse modulus of rupture is several times greater.

All Alnico, and particularly Sintered magnets, have very high values of Coercive Force (which is the capability of resisting demagnetization or loss of magnetism due to stray fields and from heat and vibration).

The curves show roughly the effect of these demagnetization factors on Alnico compared to other alloy steels.

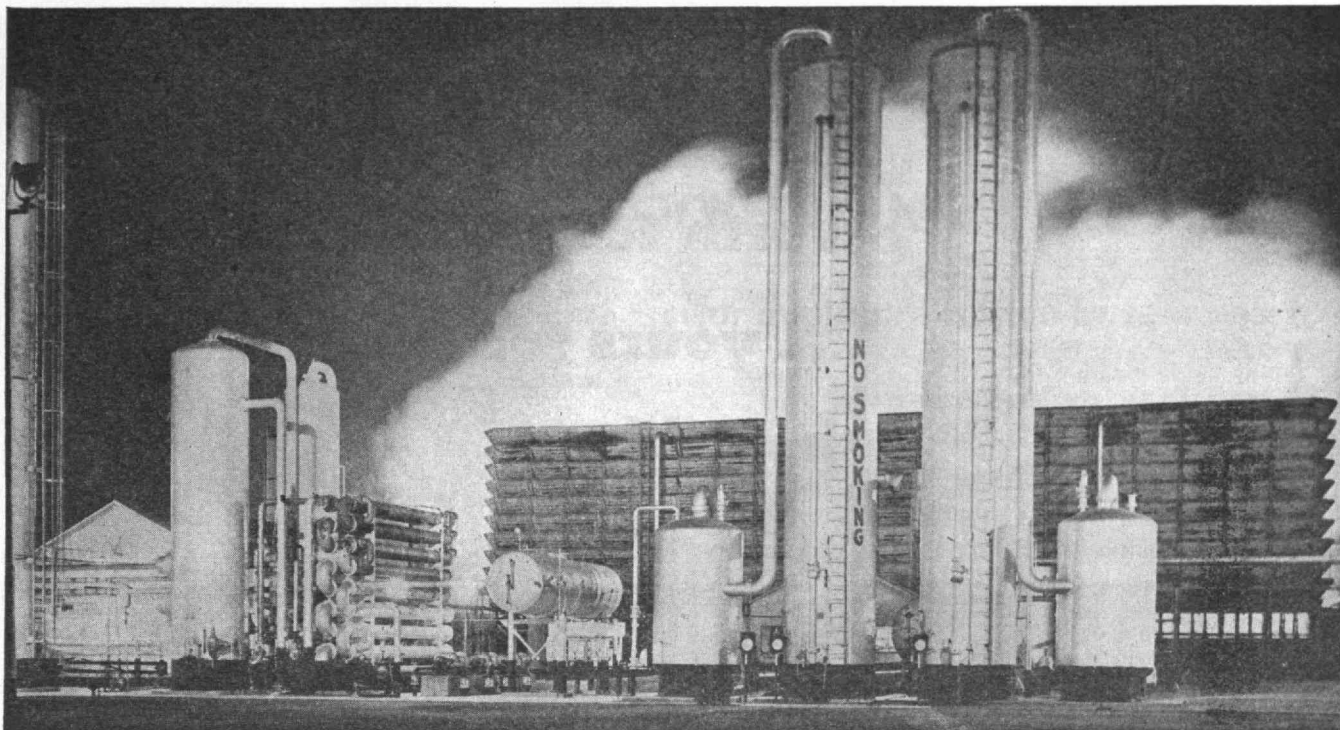


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SUBSIDIARY OF ALLEGHENY LUDLUM STEEL CORPORATION

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Next, Cabot takes this same gas and burns it for the manufacture of its own superior grades of carbon black, all of them essential to the rubber, paint, lacquer, enamel, ink, paper and plastics industries.

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TEXAS ELF CARBON CO.
GENERAL ATLAS CARBON CO.
CABOT SHOPS, INC.



GODFREY L. CABOT, INC.

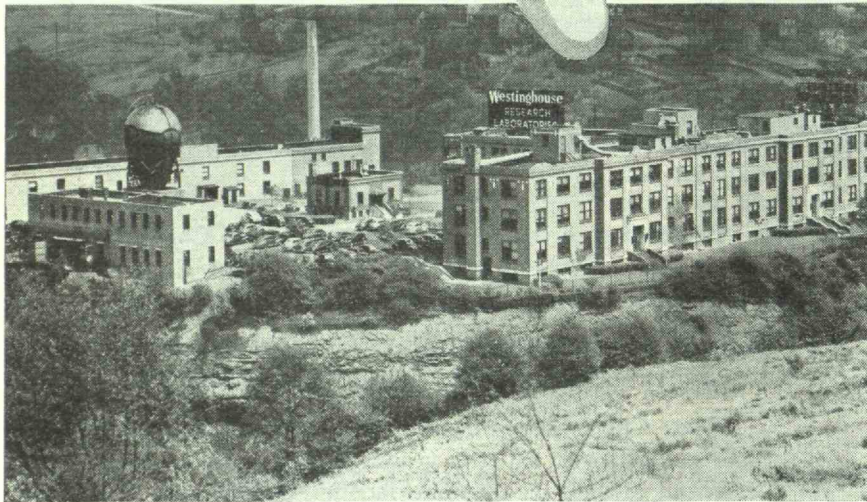
77 FRANKLIN STREET • BOSTON 10, MASS.



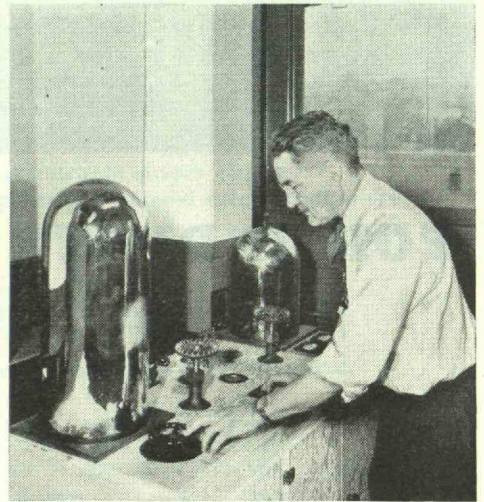
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Modern pumping system for evaporating substances under test in research on Selenium Rectifiers.

Westinghouse Selenium Rectifiers are not an overnight development. Before the present process was adopted, more than 9 years of continuous research—at a cost of more than 100,000 dollars—was spent in testing of foreign and domestic types and processing experiments.

The result has been a Selenium Rectifier comparable in quality to Rectox Rectifiers . . . long recognized as having a longer life and greater dependability than any other type of metallic rectifier.

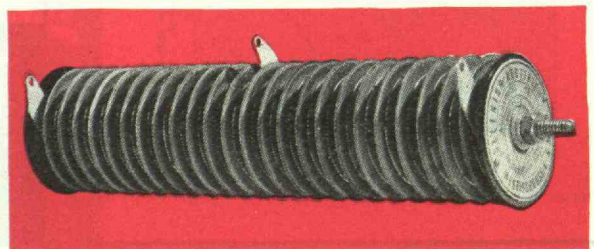
For instance: In a comparative test with other Selenium units under identical conditions—and at full rating—Westinghouse Selenium Rectifiers showed an increase in forward resistance of less than one-half that of the best units tested, indicating a longer life than any Selenium Rectifier now available.

No other Selenium Rectifier unit is backed by such an intensive research program, justifying our claim that Westinghouse Selenium Rectifiers are unexcelled where long life and dependability are prime factors.

These new Westinghouse Selenium Rectifiers are ready for the market now. If you're a user of Selenium Rectifiers you can take advantage of this investment in research by outlining your requirements to a Westinghouse representative. Or write your nearest Westinghouse office for all the facts. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna. J-21382

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PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Selenium Rectifiers



NEW

SOCKETS AND SHIELDS...

for miniature button base tubes

These new National sockets are of mica-filled natural molded Bakelite with silver-plated beryllium-copper contacts — designed for maximum dependability and adaptability. The contacts — either axially or radially mounted and removable for replacement — provide short leads and low inductance so vital to ultra-high frequency design. Sockets are built to JAN specifications — can be used with or without shields.

Made in three sizes to accommodate the various sizes of miniature tubes, the shields are of nickel-plated brass, with cadmium-plated phosphor bronze spring to provide correct tension to hold both tube and shield in place regardless of angle or vibration. Shield bases are of nickel-plated brass, with two 4/40" spade bolts mounting both socket and shield base.

You'll find hundreds of other parts, both new and old, to improve your apparatus in the new 1947 National Catalog.

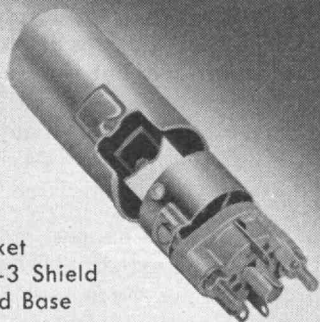


NATIONAL

COMPANY, INCORPORATED

MALDEN, MASS.

XOA Socket
with XOS-3 Shield
and Shield Base

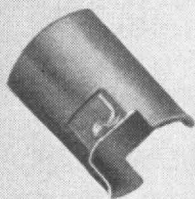


XOA Socket

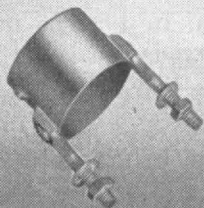
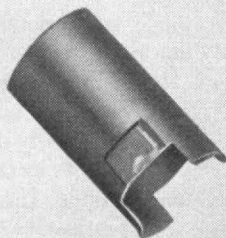


XOR Socket

XOS-1 Shield
for 1 $\frac{3}{8}$ " high
tube body
(6AK5 type)



XOS-3 Shield for
2" high tube body
(OA2 type). Also
available: XOS-2
for 1 $\frac{1}{2}$ " high tube
body (6C4 type)



Shield Base for
XOS-1, XOS-2
or XOS-3

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for GRINDER, LATHE or BENCH

Here's a Rotary Chuck (9" dia.) with many unique features. Does not heat the work... no electricity... no work thrown off. Holds tightly for light cuts on lathes and on thin work for light machining. Can be clamped to bench for testing or inspection work. When you buy a ROTARY get ALL these and other advantages

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HEVI DUTY

Hevi Duty Electric Co.

Surges Transformers

With the acquisition of the Surges Electric Company of Milwaukee, Hevi Duty can now offer quality dry type air cooled transformers with or without tap changing switches as well as special transformers for special requirements. An accelerated program of modernization will present opportunities for increased production and good delivery schedules.

Write for Bulletin S-4611

HAROLD E. KOCH '22, President

ELTON E. STAPLES '26, District Manager, Cleveland

HEVI DUTY ELECTRIC COMPANY

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THE TABULAR VIEW

Still Time.—Admonishing engineers to take the lead in finding solutions to the many questions which will naturally arise with the necessity of protecting our key industries, S. PAUL JOHNSTON, '21, recounts (page 398) the havoc which befell the Japanese who learned too little too late. Admittedly, the picture which Mr. Johnston paints, as a result of his studies in Germany and Japan during 1945 when he was deputy director of the aircraft division of the United States Strategic Bombing Survey, is not a pleasant one, but the consequences of unpreparedness are tragic. Since World War I, Mr. Johnston has long been active in the aviation industry, about which he writes with authority. Mr. Johnston expresses only his personal view in this issue, of course.

American Food Basket.—Changes in the customs and taste habits, the increased standard of living, and education and promotion are the factors largely responsible for the change in contents in America's food basket over the past half century for which reliable records are available. Such, at least, are the conclusions of FREDERIC W. NORDSIEK, Editorial Associate of The Review, whose authoritative and penetrating article (page 401) outlines the general pattern of food consumption of the American family, and traces in detail the rise and fall of three important staple foods in this country over the past five decades.

Unclogging Polyglottism.—Teaching graduate students to read technical literature in a foreign language with a saving of as much as 30 per cent of the time usually required for such mastery is but one of the results recently achieved in the Institute's Department of Modern Languages. Development of proper pronunciation of foreign languages through the use of speech recording apparatus, which enables the student to compare his lingual achievements with those of foreign language records, is another, as WILLIAM N. LOCKE, head of the Department of Modern Languages tells (page 405).

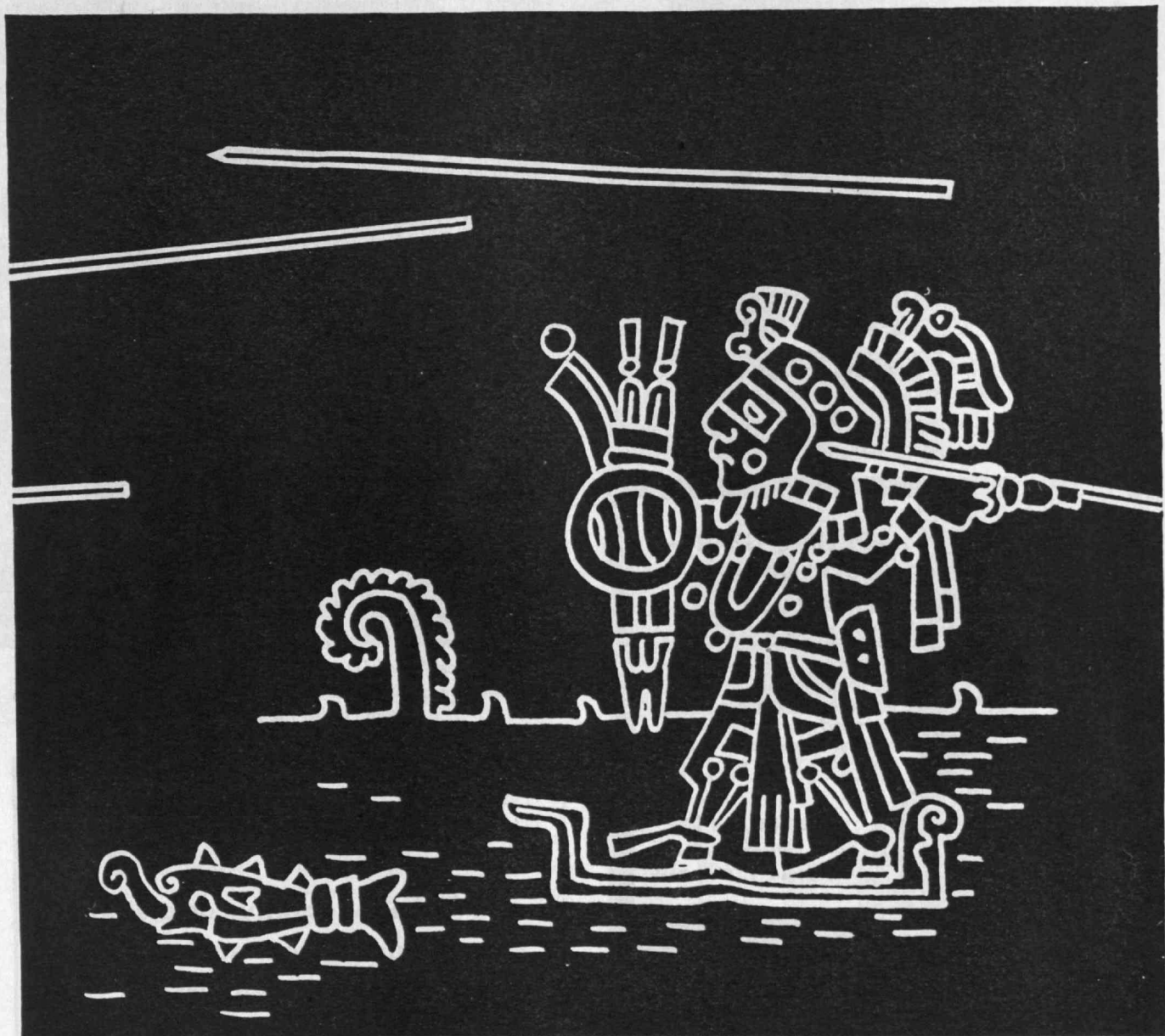
For a New Science.—Plea for the development of organization as a true science is the nub of the message (page 408) made by ALVIN BROWN, Vice-president for Finance of the Johns-Manville Corporation. As an Alfred P. Sloan Visiting Lecturer at the Institute, Mr. Brown took pains recently to elucidate the opportunities for today's students in elevating organization to the status of a true science. In 1933, Mr. Brown served in Washington as assistant to the director of the Federal Budget, later becoming assistant administrator and executive officer, and finally review officer of the National Recovery Administration. In 1937 he became vice-president of the West Virginia Coal and Coke Corporation and in September, 1946, was appointed to his present position.

Pioneer.—From a busy program in the Office of the Secretary of War, DR. EDWARD L. BOWLES, '22, takes time out to pay tribute (page 397) to an early telephone pioneer whose contributions have done much to advance this country to the position of the world's largest user of wire transmission of the human voice.

HOW TO MAKE AN ARM GROW

A human arm can throw a spear only so far. But some ancient genius of an engineer figured out that, by employing a throwing stick, which the Aztecs called *atlatl*, the lever of the human arm—and the distance achieved—could be extended, with quite pointed results for an enemy.

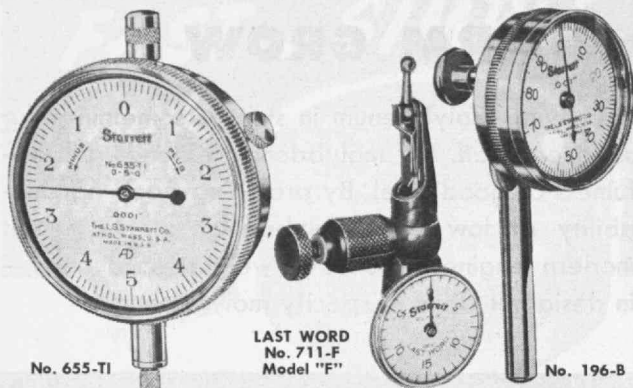
Specifying molybdenum in steel is something like using an *atlatl*. For molybdenum extends the usefulness of good steel. By providing good hardenability at low cost, molybdenum steels permit modern engineers to save weight—and costs—in design. It pays to specify molybdenum.



MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"
CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

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Performance records on all Diefendorf installations testify to the long, dependable life of precision-made gears. Every Diefendorf gear is designed and precision engineered for its particular job.

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MAIL RETURNS

It's Spring Again!

FROM S. ALBERT KAUFMAN, '19:

In the July, 1945, issue of *The Review* an article, by Irwin W. Sizer, relating to poison ivy brought out the effectiveness of oxidizing agents, such as potassium permanganate and ferric chloride.

As a surveyor, I naturally am in contact with plant growth of all kinds and have had to combat skin itchiness. In July, 1945, while surveying in Stoneham, I was in contact with poison ivy. My skin, blotched with the resulting growth, was within a week successfully treated with tincture of ferric chloride. Last August, in Malden, a similar attack on my skin was within a week abated by tincture of ferric chloride. On February 14, 1947, I surveyed in Wakefield where I had to cut some brush to locate boundaries. The next day both of my wrists were covered with a skin growth and accompanied by the usual itching. I applied tincture of ferric chloride and within a week the growth on the skin was completely destroyed, and with the exception of a little coloring on the skin, I am none the worse for the experience.

Malden, Mass.

Addendum

FROM IRWIN W. SIZER:

In agreement with Mr. Kaufman's experiences, I can say that oxidizing agents, such as ferric chloride or potassium permanganate, have proved very useful in the treatment of poison ivy dermatitis in its earliest stages. After the poison ivy toxicants have penetrated beneath the skin, they are without beneficial effect, but so is everything else which has been tried.

Lexington, Mass.

Historical Contribution

FROM CARLTON E. TUCKER, '18:

The Alexander Graham Bell story on page 267 of the March, 1947, *Review*, may have contained even more interest to *Review* readers by addition of the fact that we have in the M.I.T. historical collection the Reis telephone as well as a number of Bell models which were undoubtedly used by Professor Cross in the 1892 legal suits mentioned. We also trace the development of the telephone through the years, showing early commercial instruments as used in the summer of 1877, the competing instruments of Edison, Berliner, Phelps, Gray, and Dolbear. Later instruments as devised by Blake, Hunnings, and White are also in the Institute's collection.

M.I.T., Cambridge, Mass.

Postscript

FROM W. MACK ANGAS, '17:

My belated request for the addition of a parenthetical foreword to
(Concluded on page 428)

Speed with Economy

**We have recently completed
our 9th contract for
MACHLETT LABORATORIES, INC.**

whom we have had the pleasure
of serving since 1933

W. J. BARNEY CORPORATION
101 PARK AVENUE, NEW YORK

INDUSTRIAL CONSTRUCTION

Alfred T. Glassett '20, Vice President

"What is all knowledge...but recorded experience?"—CARLYLE



Why some things get better all the time

HEALTH, strength and zest for life—of youngsters, of workers, of all of us—depend on food. Food produced by the millions of tons yearly. And each year our farmers have *more efficient means* to do their tremendous job.

The modern farmer has a tractor, a truck, and uses specialized farm tools—all with parts made increasingly of alloy-toughened steels and of plastics, for sturdier, more efficient service. His milking machine has parts of rust-resistant stainless steel. Chemically fortified feeds grow healthier livestock. New chemical sprays protect his crops from insects and plant diseases. And improved fertilizers restore vital elements to his soil.

From care of the life-giving soil to precious harvest, the farmer's means for food production are steadily improving... because into these means go *better and better materials*.

Producing better materials for the use of science and industry and the benefit of mankind is the work of UNION CARBIDE.

Basic knowledge and persistent research are required, particularly in the fields of science and engineering. Working with extremes of heat and cold—frequently as high as 6000° or as low as 300° below zero, Fahrenheit—and with vacuums and great pressures, Units of UCC now separate or combine nearly one-half of the many elements of the earth.

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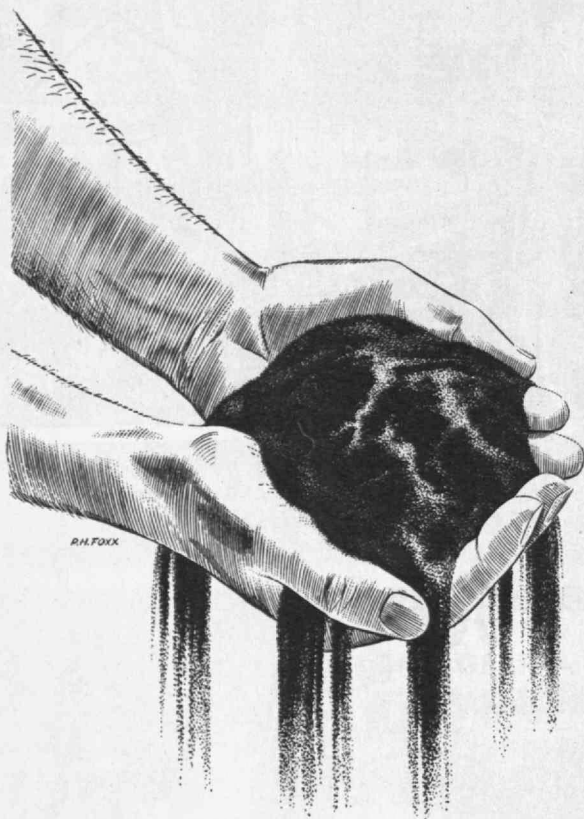
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Black flour



These three factors are the unwritten plus-values in every C-E contract —

Knowledge — to solve today's, and tomorrow's, steam generating problems.

Experience — to interpret, from a world-wide background in every important industry, the specific needs of each installation.

Facilities — to manufacture complete steam generating units for every requirement, from 30 boiler horse power up to the largest.



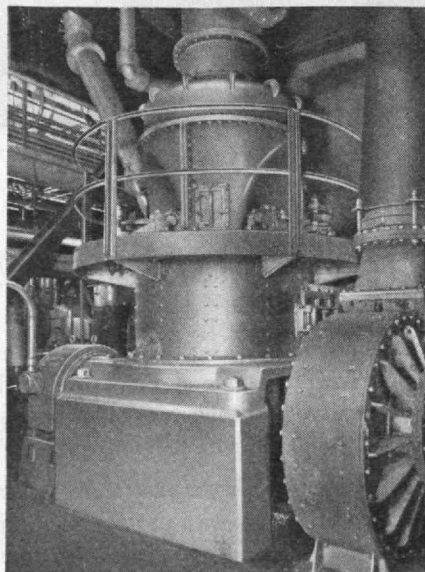
A MAN once looked at this substance and asked, "What is it, black flour?" Actually he was looking at coal . . . ground to about the fineness of flour — pulverized coal.

That was nearly 30 years ago when C-E engineers first demonstrated that powdered coal, as it was then called, was a practical and highly advantageous fuel for firing boilers. Today it is the generally accepted method of firing large power station boilers and is widely used for boilers in the middle-size range.

But pulverized coal firing proved to be something more than just an improved method of burning coal. It opened the way to other important developments such as the water-cooled furnace, the use of pre-heated combustion air and the designing of boilers far larger than had been considered practicable. In all of these developments Combustion Engineering had a major part.

The total contribution of pulverized coal firing to the national economy cannot be accurately calculated, but it is conservative to say that in coal savings alone it amounts to millions of tons annually.

B-122



C-E RAYMOND BOWL MILL — Today's most advanced design of coal pulverizer — a standard component of the C-E Pulverized Coal System.

COMBUSTION ENGINEERING

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Sandee

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2. Copolymer Vinyl Chloride—Vinyl Acetate

SANDEE extruded flexible vinyl tubings and shapes served admirably during the war. Now, in peace, Sandee extruded flexible vinyl items are also serving admirably, but in many additional and diversified functional applications.

Flexible vinyls are excellent electrical insulation materials, are extremely tough, wear resistant, moisture, chemical and solvent resistant and in addition provide beauty of color and finish for many applications.

Electrical insulation tubing, carrying straps, mattress handles, garden hose, bumper sections, gaskets and many other successful applications indicate the versatility of this excellent material.

Study the material property chart on these materials and consult Sandee for aid in design and selection of proper formulation to satisfactorily meet your requirements.

OUTSTANDING PROPERTIES OF SANDEE FLEXIBLE VINYL MATERIALS

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|--|--|
| 1. Specific Gravity
—1.22 to 1.42 | 6. Burning Rate
—Nil |
| 2. Tensile Strength
—2000 to 3000 p.s.i. | 7. Odor
—Faint to none |
| 3. Dielectric Strength, { — 250
Short time 1/4" V.P.M. { to 450 | 8. Resistance to Chemicals
—Excellent |
| 4. Low Temperature Flexibility
° F—0° to -85° | 9. Resistance to aging
—Excellent |
| 5. Water Absorption
—Nil | 10. Color
—Unlimited |
| | 11. Finish—Satin or high gloss |

SALES REPRESENTATIVES IN 19 PRINCIPAL CITIES

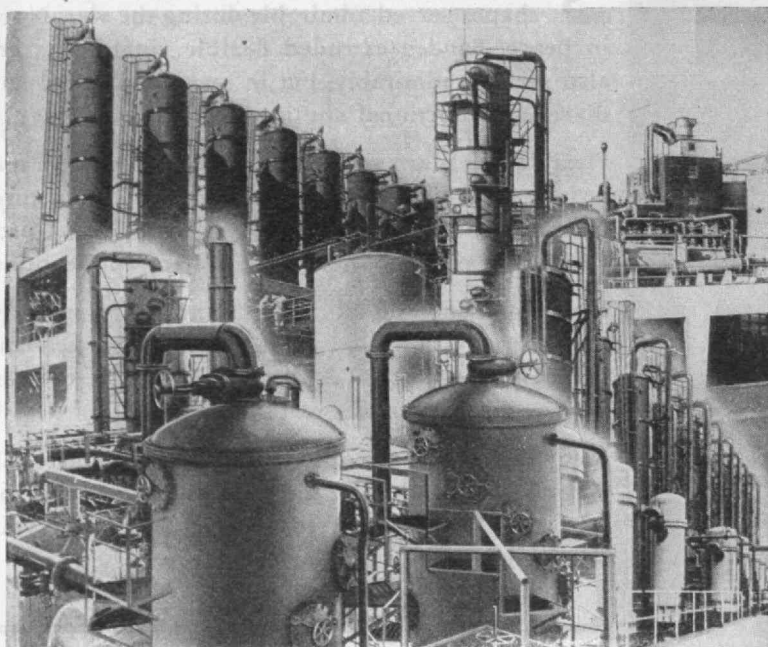
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46 YEARS EXPERIENCE



For Creative Analysis of manufacturing requirements; higher Production Efficiency; Economical Operation; consult the Forty-Six-Year-Old Vulcan Organization specializing in Chemical Process Engineering and Equipment Fabrication.

Vulcan has the Organization to Design, Fabricate, Erect and Initially Operate Complete Plants for the Process Industries.

~ **DISTILLATION**

~ **EVAPORATION**

~ **EXTRACTION**

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VULCAN

CINCINNATI

THE VULCAN COPPER & SUPPLY CO., CINCINNATI, OHIO

SPENCER**Equipment for***Metallography***METALLURGICAL MICROSCOPES**

From this complete line of Spencer Metallurgical Microscopes you can select an instrument that exactly meets your needs. Here are some of the many outstanding features for convenience and speed in operation:

- **AMERICOTE OPTICS** to eliminate reflections and provide added contrast.
- **WIDE RANGE ADJUSTABLE STAGE** to handle unusually large or small specimens.
- **LARGE, STURDY, RESEARCH-TYPE STAND** with micrometer screw fine adjustment . . . interchangeable body tubes.
- **BRILLIANT, UNIFORM ILLUMINATION** from a vertical illuminator that is simple to operate, sturdy, and always cool enough to handle.
- **VARIETY OF EQUIPMENT** for teaching, routine examinations, and research.

STEREOSCOPIC MICROSCOPES

Two distinct advantages are offered by these instruments:

1. The image is erect and a wide field of view is provided.
2. The image has depth and shows the specimen in three-dimensional perspective.

These are real advantages in studying surface characteristics and examining small parts.

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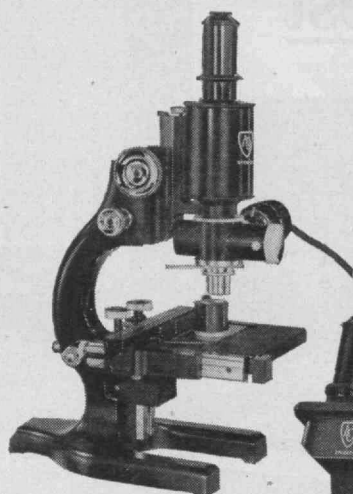
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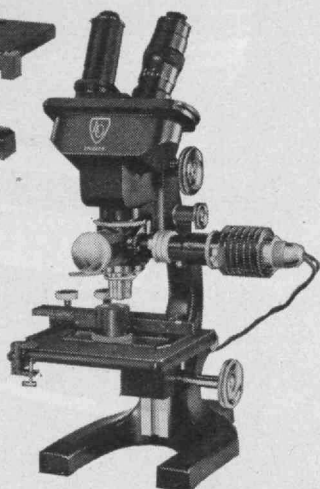
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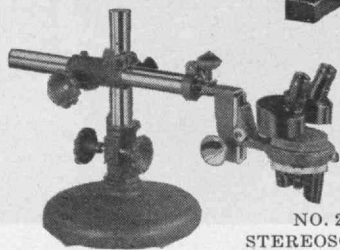
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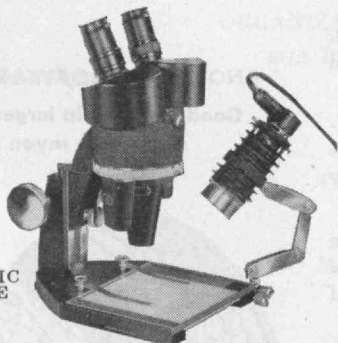
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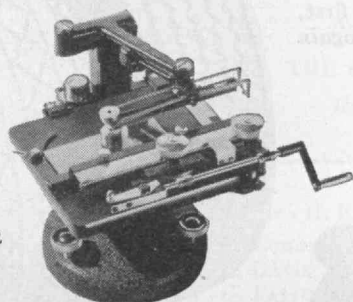
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THE TECHNOLOGY REVIEW

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AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY



Photo by Harold M. Lambert

Whooppee!!

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From a photograph by Harold M. Lambert

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Official Photograph, U. S. Navy

Nuuanu Pali, pass across the mountain ridge separating Honolulu from Oahu

THE TECHNOLOGY REVIEW

Vol. 49, No. 7



May, 1947

The Trend of Affairs

A Whale in Every Pot?

FEW persons would characterize the British as being given to overexaggeration, or as being skilled players in the great American game of "bigger and better." Yet, research now in progress by the Department of Scientific and Industrial Research in London is of the kind that dwarfs the American slogan for a chicken in every pot, for the Department is conducting experiments in arctic whaling to determine whether lean whale meat can be utilized for human consumption on a wider scale than heretofore.

In whaling, certain general principles of slaughtering the mammals for meat and handling the carcasses can be followed only with great difficulty. One of the greatest practical difficulties is rapid cooling of the carcass immediately after death. Because of the very considerable bulk of the whale carcass and the thickness of the layer of fat under the skin, cooling takes place very slowly. Indeed, the whale's blubber provides an excellent natural system of thermal insulation which enables the mammal to thrive in cold waters and which is the reason why its meat is likely to go bad rapidly, without prompt and effective refrigeration. The time between death and butchering on the deck of the factory ship may vary considerably, so that some method of cooling the carcass as soon after death as possible is exceedingly desirable.

Scientists on the whaling factory ship, *Balaena*, recently conducted experiments to test a likely method of more or less natural refrigeration for the preservation of whale meat. An advantage of the method is that it requires but slight modifications from normal procedure of whaling. When a whale is caught, its carcass is normally inflated with air to prevent sinking. This causes the whale to roll over on its back and float belly uppermost. In the refrigeration experiments, portions of the skin and blubber were removed, as soon after death as possible, to admit cold sea water which had a temperature of 30 degrees F.

Machine versus Man

THE Japanese still make appreciable amounts of quality papers by hand processes that have changed little during the past 10 centuries. The fibers for Japanese handmade papers are derived from the barks of three native shrubs. The bark is stripped from the shrubs and fibers are derived from them by painstaking hand operations. From a mash of wood fibers in water, which is inserted in a screen or bin through which the water flows away, the paper is produced by a shaking operation which knits the individual fibers together in a closely intermingled mat. Using such primitive hand operations, it has been estimated that one Japanese papermaker can make as much paper in one year as can be produced by a relatively modern papermaking machine in about 20 minutes. The production rate of the machine is therefore something like 7,200 times that of hand labor.

Possibly hand operations in the manufacture of paper might be adequate to meet Japanese needs. Possibly also, in this country, we have come to regard paper as a readily available and comparatively inexpensive commodity with almost unlimited uses. But the 150,000,000 people in the United States and its territories and possessions representing about 7% of the world's population, consume 72% of the world's paper production. Such a record of consumption could never be achieved so long as manufacturing operations depended on manual operations alone.

Forest Farms

CURRENT figures from the Department of Agriculture's Forest Service indicate that we are still cutting lumber faster than it is growing. In board feet, the forests of this country have been reduced to less than half their original content, and the finest, most accessible stands have long since gone except where protected by state or federal governments. Secretary of the Interior Krug has declared that about the only area on the North American

mainland which can now support newsprint or kraft-paper development on a perpetual basis is Alaska. Fire and disease have probably taken a heavier toll than man, but the conservationists can still make the point that a primary national resource is being drained at a faster rate than it is being replenished.

Since the essence of the problem can be stated in simple arithmetic, it has long been understood. There are also signs that corrective steps are now gaining sufficient momentum so that the Forest Service's dream of a perpetual forest reserve may achieve reality. The concept of a forest on a continuing basis was put into practice in Europe long ago, although conditions frequently made it impossible to maintain sufficient wooded area for a country's needs. One rayon manufacturer has used the financial pages of at least one newspaper to announce that the forest lands reserved for it by the province of British Columbia will be self-perpetuating through scientific management and planned afforestation. Whatever the reasons for such advertising, the fact remains that many privately owned and nationally protected forests in this country are also being cut and replanted (or allowed to reseed) so that the total lumber "capital" remains undiminished. As might be expected, the small owners as a class, with less to gain, have not been so quick to do likewise. Because their total holdings represent about half of our forest acreage, increasingly intensive efforts are being made by government agencies and large users of wood to educate this group in the methods and benefits of a stable forest. Only recently, however, has the economic situation in this country begun to make it generally profitable for farmers, as well as for lumber companies, to treat wood lots and forests as a continuing source of income rather than as a mine to be exhausted in one sweep.

The factors that are encouraging the growing of trees as a farm crop are partly technical. When logging railroads (with a construction cost of \$25,000 per mile and high operating expenses in addition) were the only means of moving logs to the sawmills and a donkey engine was used to assemble the loads, only high-grade lumber could be handled profitably. A stand had to be thick with large trees to attract loggers. But roads suitable for trucks can be built with modern earth-moving equipment at about \$1,500 to \$5,000 per mile. Tractors, skidpans, and Diesel trucks have combined to lower transportation costs further, and selective cutting is now feasible on stands that produce about one-fifth the number of board feet once thought necessary for profitable operation.

Small, semiportable sawmills, such as were used by the armed forces during World War II, are another important aid to the farmer-forester, for with them it is feasible to make many setups, each for a comparatively small run of lumber.

There is now a market for a larger number of species and for smaller trees than was formerly the case. The owner of a wood lot near a pulp mill can sell quite small trees if cut to size and delivered to the mill. Selective cutting produces many small logs, since trees must frequently be cut when far from full-grown if they are diseased, unfortunately placed, or otherwise defective.

Just prior to the war, state nurseries were producing seedlings at the rate of almost 100,000,000 per year. Since 1935, part of these seedlings have gone into a shelter belt that, it is hoped, will eventually stretch from North Dakota through Texas, approximately along the 100th

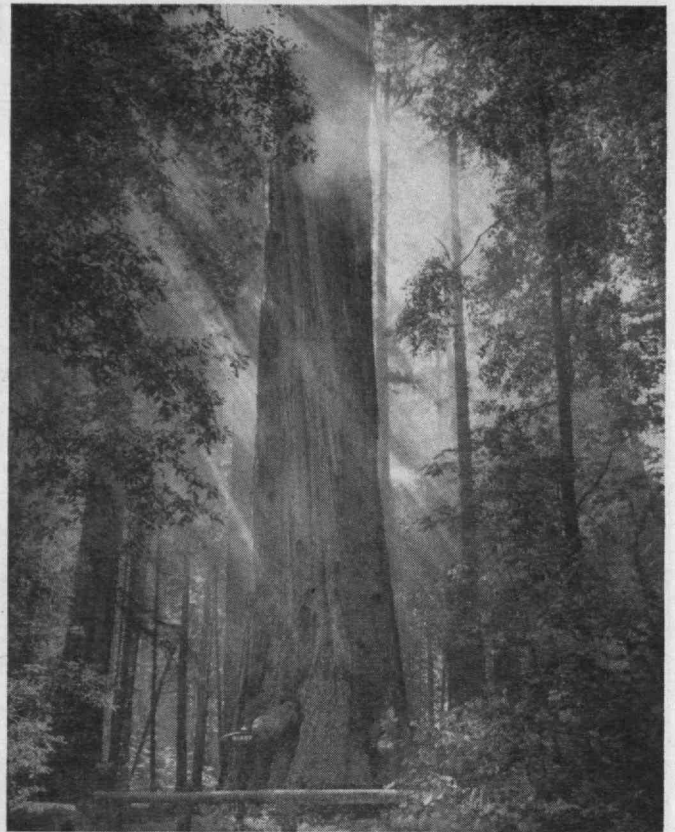


Photo by Wynne Bullock-Artco

The conservationist can still make the point that a primary national resource is being drained faster than it is being replenished.

meridian. This is all potential Dust Bowl country, and the reason for the shelter belt is to protect and hold down the soil against wind erosion. It is estimated that eight to ten acres of trees will protect a farm of 160 acres. To date, well over 200,000,000 trees have been planted on about 30,000 farms. Other large users of seedlings are open strip and pit coal mines, particularly the former. The trees used to cover the spoil banks which remain after strip mining is completed frequently grow faster on the raw dumps than on undisturbed ground. In Illinois, which state leads in the production of coal by strip mining, operators planted more than 8,000,000 trees between 1938 and 1943. In Pennsylvania, the state nurseries have distributed more than 15,000,000 trees to mining companies since the start of that practice in 1899. These figures are sufficiently large to sound quite impressive, but in Illinois, for example, only 8,466 acres had been forested by the end of 1943.

There appears to be about 75,000,000 acres of marginal and submarginal land in this country that is suitable for reforestation. At the present rate of planting, it would take centuries to finish the job. This is the basic reason for the Forest Service's proposal that the state nurseries should raise their output to one billion seedlings per year. The country is fortunate in that we still possess sufficient wooded or potentially wooded area to permit, with foresighted treatment, a continuous drain at our normal rate of production of from 30,000,000 to 40,000,000 board feet per year. Still, with increasing production and continuing higher standards of living, we need to make every effort to conserve — and, wherever possible, replenish — our natural resources, once believed to be inexhaustible but lately shown to be quite otherwise.

Telephony in Its Pioneer Era

BY EDWARD L. BOWLES

THE passing of Hammond Vinton Hayes, '85, in Boston, on March 22, 1947, brings to a close the life of a scientist and engineer who conspicuously influenced the art of telephony. In 1885, after receiving the second doctor's degree to be granted by Harvard University in the field of physics, Dr. Hayes joined the staff of the American Bell Telephone Company in Boston as head of its laboratory. This was at a time when what is now the vast Bell System was in the making; a time when the outcome of the efforts of Bell and his New England supporters was in grave doubt. Bell's invention of the telephone had been made a decade earlier. Some five years had elapsed since a settlement had been made with the Western Union Company — the Bell Company's only competitor — in which it was agreed that the Western Union would keep out of the telephone business for a period of 17 years. But three years before that, this same company had turned down the Bell rights offered to them for \$100,000. The rights of Thomas A. Edison, Emile Berliner, Stephen Gray, Daniel Drawbaugh, and others were being contested. Bell's backers, Gardiner G. Hubbard and Thomas Sanders, were busy with organizational problems and James J. Storrow was deep in the complexities of litigation in their behalf.

It was in this dramatic and portentous setting in the early days of telephony that Hayes found himself when he joined the telephone organization. Having studied under Professor Charles R. Cross, '70, at M.I.T., who was retained by the Bell interests, Hayes was soon involved in the intricacies of what was then a crucial patent litigation.*

He was faced with the problem of evaluating inventions and improvements rapidly coming to the fore in this initial rush of telephonic development. Limitations of the telephone as a commercial instrumentality were rapidly becoming apparent. For example, the distance over which articulate speech could be transmitted made long-distance transmission impossible. Wagons, delivering cells to replace worn-out batteries at the subscribers' sets, were falling apart in the street because of the corrosive action of electrolytes. There were other seemingly insurmountable problems, aggravated by the unprecedented rate of growth of interest in telephone service.

It was on Hayes's shoulders that these current burdens fell. But he had also a far greater and less obvious load to carry in the planning and administration of a program of research and development to anticipate the problems yet to come and to ensure the future of the telephone business. In 1888, Hayes installed an isolated telephone system in the offices of the American Bell Telephone Company in Boston, using a central battery of a large number of cells to replace individual batteries in the homes of subscribers, and described such a system in a patent dated December 25, 1888. It was through Hayes's imagination, drive, perseverance, and leadership that the single central office battery replaced the individual batteries in the subscribers' telephone instrument. This was one of the greatest single contributions to be made in the early commercial use of telephones after the Edison microphone made a startling improvement in the Bell device by introducing the phenomenon of amplification. By direct contributions of Hayes and his staff, this microphone was developed into a practical device — the solid back transmitter. Another contribution which Hayes made in the pioneer days of commercial telephony was the "heat coil" — which would now probably be known as a thermally operated switch — for the protection of delicate telephone apparatus against stray currents.

Hayes not only directed the attack of these problems but he contributed significant inventions. Under his guidance was the attack on these subtle problems which limited the distance over which speech could be transmitted. One of the needs was for means which would rejuvenate or amplify speech as it became attenuated in traveling toward its destination. Another was for a technique which would overcome the tendency of telephone lines, and particularly cables, so to alter the quality of the transmitted speech that even though its volume were adequate the distortion might render it unintelligible. Hayes maintained a group to work constantly on the development of means of amplification to devise what, in telephone parlance, are known as repeaters. It was through this pioneer effort that the distance of successful transmission was extended from New York as far west as Chicago in 1892, and to Denver in 1911. This work on electro-mechanical repeaters paved the way for the application to this task of the modern electron-tube amplifier which further extended the range of wire telephony to transcontinental distances in 1915.

It was Hayes who selected Dr. George A. Campbell, '91, to work on the problem of overcoming the distortion of speech in transmission. Campbell, like Hayes, was a brilliant, highly educated man. (Concluded on page 436)

* Additional data on the importance of this suit and the part which Cross played in the early stages of telephone development were published in the March, 1947, issue of *The Review*, pages 267-269.

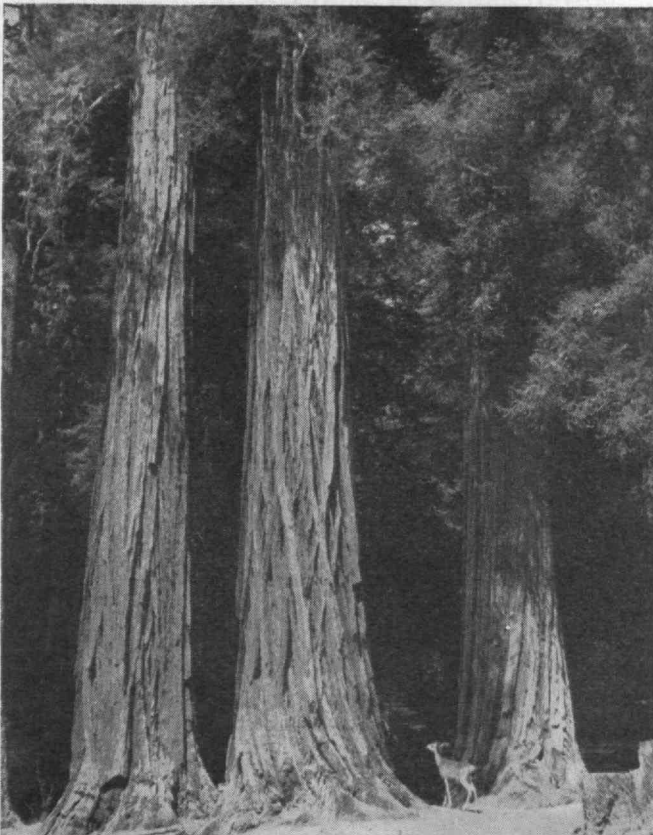


Photo by Wynne Bullock-Artco

The finest, most accessible stands have long since gone except where protected by state or federal governments.

FOR almost a year and a half I was in the junk business. As chief of the aircraft division of the United States Strategic Bombing Survey, my job was to investigate, *in situ*, what had happened to the once great aircraft industries of Germany and Japan. I mention the junk business advisedly, for junk was all that remained of Focke-Wulf's great production chain in Northwest Germany, of the Fieseler and B.M.W. factories at Kassel, of the vast Messerschmitt complex in the Augsburg-Regensburg-Munich triangle, and of every other known plane or engine factory of any consequence in Hitler's former domain.

In Japan, the situation was the same, but worse. Airplane and engine plants that had approached Willow Run in size and in activity (although never in production), Mitsubishi of Nagoya, Nakajima at Tama-Musishino, and Kawanishi and Kawasaki in the Osaka area, were reduced to gaunt skeletons. Out of these colossal bone-yards we pieced together what we could of information that might be of value to the future of our own air industries.

The full story of the conclusions reached by the Bombing Survey in the several industrial fields will be found in a voluminous series of reports already published, or in the process of publication, in Washington. The purpose here is to scan briefly one phase of the findings in Japan, the underground dispersals of the aircraft industry, to point out a lesson that is of vital importance to American industry today.

As human beings, we hope that war will never come to our shores. As realists, some skepticism on this score appears warranted. As engineers, we must plan what to do about it, if, as, and when it comes. Regardless of circumstance, we must have the required knowledge and ability at our disposal. We cannot afford to do as the Japanese did — learn too little, too late. Our future situation will never be comparable to that faced by the Japanese Empire in the summer and fall of 1944, but there are lessons

Nipponese

Nightmare

BY S. PAUL JOHNSTON

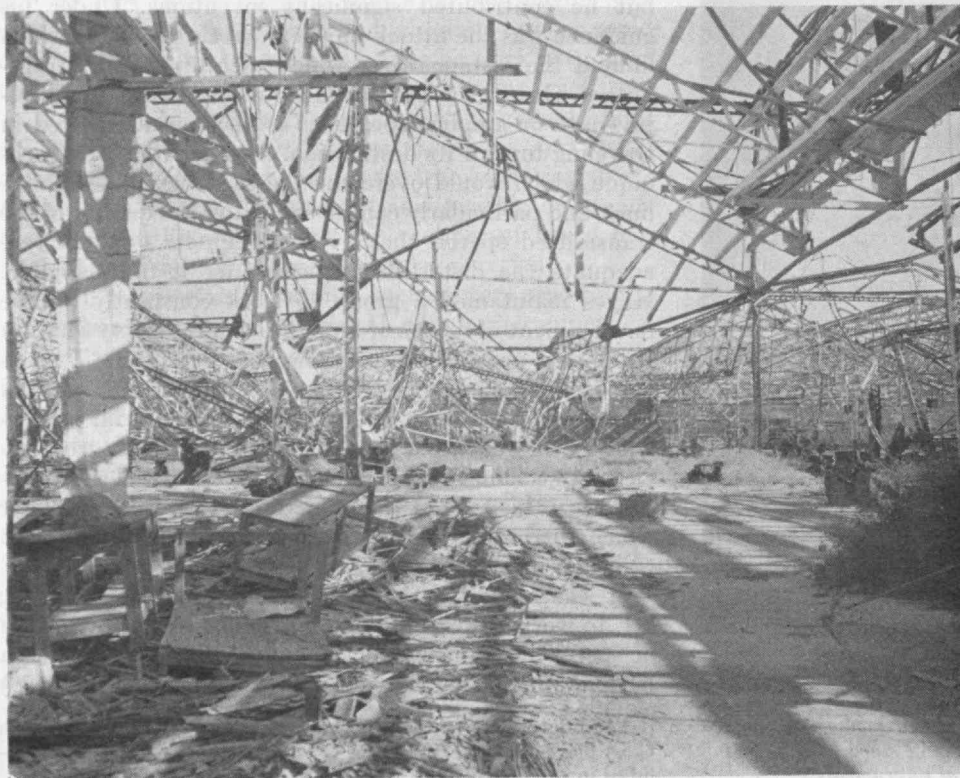
to be drawn, and obvious mistakes to be avoided. Let us look at the evidence.

By midsummer of 1944 the Japanese aircraft industry found itself swaying precariously on the horns of a dilemma. As a result of a great drive for production by the Munitions Ministry, many factories found their shelves almost bare of certain essential items.

Production on Paper

The well-known "numbers racket" was operating, as it did elsewhere, even in these United States. Each month's production statistic *must* be better than that of the month preceding, so, — all available bits and pieces were put together into an approximation of finished articles, counted, and pushed out of the factory doors. Sometimes months elapsed before such aircraft could be made operational — but that was not immediately important to the statisticians!

The statistical method works well as a production incentive scheme so long as production programs are backed up by adequate planning. But in Japan both the long- and short-range planning for aircraft production fell far short of the minimum.



▲
The huge on-the-surface Japanese aircraft plants were reduced to gaunt skeletons by United States strategic bombardment. This illustration gives a typical example of conditions found by the Bombing Survey. Note the complete absence of machine tools.
▼

Out of the rubble and dust of what was once the Japanese aircraft industry comes a lesson that is pertinent to the future well-being of the United States: *If we must eventually put our key industries underground, we need to find out how to do it now.*

The pulling and hauling by the Imperial Army and Navy for essential matériel and equipment, although eventually somewhat improved by the efforts of the Munitions Ministry, created an impossible situation in the aircraft industry. We had our own troubles in co-ordinating Army and Navy requirements, but by comparison, the Japanese operated at a comic-opera level, — strictly Gilbert and Sullivan. Shortages developed that could not be met. Essential parts for production lines turned up missing. Spares and replacements for operating units in the field were seldom at the right places at the right time. Basic material stocks dwindled. The rarer alloying materials, needed for high strength steels for high performance aircraft engines, all but disappeared, making many design and tooling changes inevitable. Neither replacements nor substitutes were to be had due to the effective blockade imposed by our Navy and our Air Forces. During most of 1944, although great quantities of such essential materials existed in Japanese-held territories, only dribblets reached the Home Islands. By January, 1945, the supply was cut off completely.

At the same time, the labor situation had become extremely critical. The demands of the Japanese Army for

troops to pour into China and into the beleaguered islands of the Southwest Pacific drained off practically all able-bodied man power. Mainly women, children, high school students, and the aged and infirm were left to man the great aircraft plants in Nagoya, Osaka and Tokyo. As a result, the output per worker per day in terms of finished aircraft (never a very high figure) dropped almost below the level of visibility.

Then, to top it all, Saipan, the impregnable gateway to the Empire, fell to the advancing American forces.

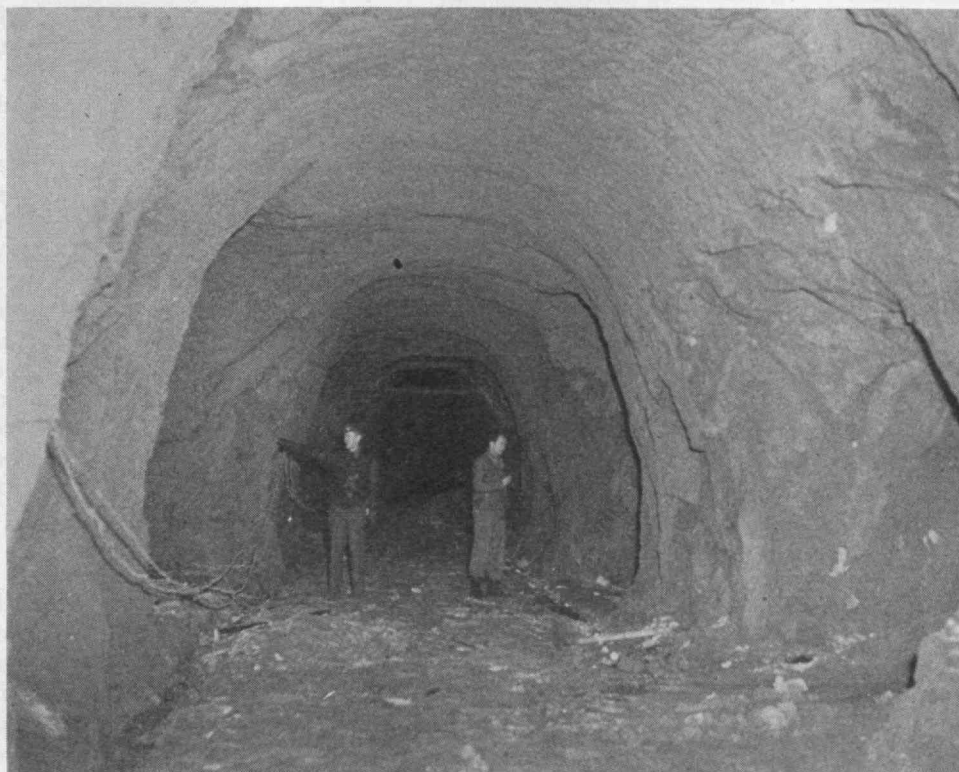
The loss of Saipan was a rude shock to all Japanese industry. "Higher ups" could not have failed to foresee the handwriting on the wall, but until then the average Nipponese still believed that his "undefeated" navy would keep the American bombers at more than arm's length. Although orders for the dismantling and underground dispersal of key industries had been on the books for many months, the belief that the Home Islands were unreachable was so firm that they were generally ignored. Further, few adequate plans for execution appear to have been made.

Wrong Answer to Dilemma

Here, then, was the dilemma. Things being as they were, would it not be better to continue to ignore dispersal orders and try to patch up a rapidly deteriorating industrial condition in the hope of producing enough aircraft to keep back the invaders from the ramparts? Or, would it not be the better part of valor to scurry underground as fast as possible to protect the essential tools of industry against possible attack, so that the war could be continued even if most of the on-the-surface facilities were destroyed?

To this basic question the Japanese came up with the wrong solution. He elected to ignore the threat in the hope of satisfying the demands of the immediate future. But he failed miserably. During the fall of 1944 aircraft production went from bad to worse. Fewer and fewer planes were

▲
Typical tunnels driven through the relatively soft volcanic rock in Japan. Ground is easily worked by hand tools and is strong enough to be self-supporting for galleries of reasonable dimensions. Most of these tunnels were excavated by captured labor under Army supervision.
▼



delivered to the Emperor's hard-pressed squadrons. Units in the field watched essential supplies of spares dwindle to a trickle and finally disappear altogether. By mid-December, when the first heavy B-29 raids took place, the output of Japanese aircraft had dropped to a level below that of January, 1944, and the rate-of-production curve was dropping faster than it had risen a year before.

The first raids by the Marianas-based B-29's of the 20th Air Force, really finished the Japanese aircraft industry. They sounded the gong that started the panic, and the long-deferred dispersal began. The Urgent Dispersal of Plants Act of February, 1945, made such action mandatory. Like ants struggling to remove their valuables from a broken hill, the Japanese began to scatter aircraft production into the mountains. As fast as they could, they dismantled their plants. By rail, by road, by horse track and footpath — on wheels, on rollers, and on human backs — they made desperate efforts to save their precious production tools by getting them underground, — any place, but always underground. They themselves accomplished at least half of the job that our big bombers had set out to do. By destroying their own aircraft industry they committed industrial hari-kari.

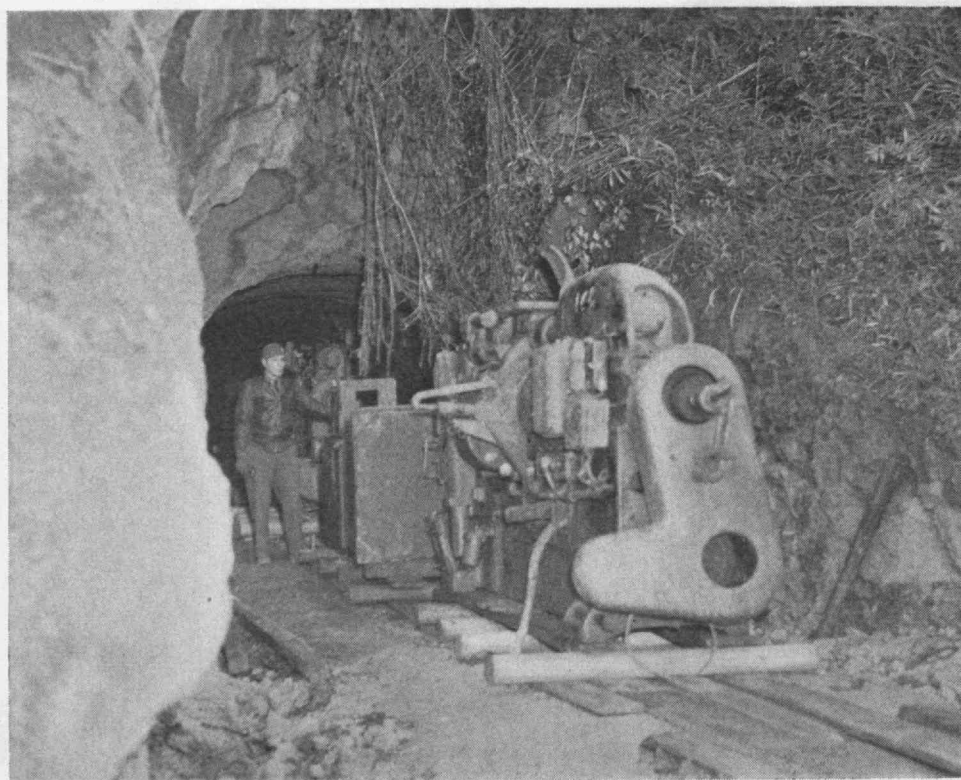
Few people realize the extent to which the Japanese industry went underground. In the course of investigations made in October, November and December, 1945, as a part of the work of the United States Strategic Bombing Survey, some 100 sites for underground production of aircraft and engines were identified and located. These plants had a total planned manufacturing area of about 12.5 million square feet. By war's end, about 7.2 million square feet had been excavated, and some 11,000 machine tools were in place. It is estimated that, in the summer of 1945, between 35,000 and 40,000 people were employed underground, but the actual output of finished aircraft or engines was very small. The entire effort had been too late to be effective.

There was a striking difference between the underground installations of Japan and those that had been observed in the spring of 1945 in Germany. Nothing like the carefully planned and well-executed installations at Nordhausen or at Nekar-els were found in Japan. The Germans had had plenty of prior experience with underground installations and had planned for their use far in advance. In Japan, dispersal was purely an operation of desperation. Even if they had known as much about underground installations as did the Germans, they made the mistake of waiting too long to begin operations.

Japanese Underground Plants

The typical Japanese underground plant was housed in hastily driven, unventilated, poorly drained tunnels or galleries, hand-hewn into Japanese mountain sides. Natural caves and a few existing mines were used, but most of the excavation was new. Fortunately, much of the terrain of central Japan lends itself well to such operations. In many places the volcanic rock is easily worked with hand tools. Properly designed tunnels of reasonable dimensions may be cut without the need of extensive shoring to keep the overhead in place. Little blasting was necessary. The main requisite appeared to be an army of strong backs and a plentiful supply of picks and shovels.

The labor was done largely by Chinese and Korean prisoners of war. A few private contractors were given some of the jobs but, for the most part, the construction appears to have been handled by the Japanese Army. Battalions of engineers, and even infantry, were moved into mountainous areas and set to digging. Large areas of Honshu and Kyushu were to be honeycombed. A remarkable feature of many of the installations was their inaccessibility. How some of the heavy machinery was transported over roads that were almost impassable to a jeep in good weather is still somewhat of a mystery. Lathes, drill presses, boring machines, and other heavy tools must have been manhandled (*Continued on page 426*)



Most underground aircraft machine sites were incomplete at the end of World War II. In this aircraft engine factory machine tools were manhandled into the gallery on blocks and rollers when the war collapsed.

America's Changing Food Pattern

Although per Capita Consumption of Food Remains Close to 540 Pounds per Year, Changing Tastes and Economic Factors Modify the Content of America's Food Basket

By FREDERIC W. NORDSIEK

EATING is as pervading and urgent an element in human life as it is in the existence of lower living forms. During most waking hours, the human organism is continually conscious of some sensation connected with food. Even basic human social structures are built around meals. The quantities and kinds of foods consumed by men and women determine not only their physiological well-being and stamina, but also their mental equanimity and morale.

The importance of food to mankind may likewise be measured in terms of the amount of nutrients required to maintain human life. Consumption of less than 500 pounds per year of food, dry basis, means hunger and emaciation for the average individual. Contrariwise, consumption of as much as 600 pounds of solid nutrients, yearly, usually results in obesity. In the United States, certain individuals exceed one or the other of these limits, but the average per capita consumption of food by Americans lies in the middle of this range, and is about 540 pounds yearly. In the past, per capita food intake has dropped during times of economic depression and during wars, but these declines have always been followed by corresponding increases. Hence the secular or long-term trend of total food intake in this country has remained quite level, certainly during the Twentieth Century and, so far as records exist, previous to then. Does this mean that the food pattern of the United States has long remained static? Indeed no, because although total food intake has remained relatively constant, the kinds of food composing this total have changed extensively.

The amount of food consumed by an individual is determined by need, as dictated by body size and physical activity, and the factor of greediness. But individual choice of kinds of food is influenced by a vastly more complex array of factors. Availability and cost are prime influences in food choice, but not limiting ones; for example, wheat has long been cheaper and more plentiful than rice in Japan, yet rice remains the staple Japanese cereal. This illustration points to a third and governing factor in the choice of food, namely, custom. Effects of these three main determinants of food choice are variable, because availability, cost, and custom are not static.

Availability of established foods may increase, as by improvements in production and processing methods; or may decrease, as by crop failures or by augmented tariff barriers raised against imported foods. Essentially new foods occasionally become available, as when tomato juice was "invented." Influencing the choice of foods is the relative cost which alters through changes in prices of foods, and also through shifts in purchasing power of the consumer. Custom is based on a more or less static background determined by national origin, prejudices,

concepts of nutritional value (both correct and fallacious) and taboos of religious or sectarian nature. Custom is also subject to change by dynamic influences, such as education, propaganda, and advertising. That the influences toward change in the dietary have been most active in the United States during the Twentieth Century is evidenced by the markedly changed constitution of the American food pattern since the turn of the century.

In its earlier years, the extroverted young United States was too preoccupied with growing to maintain adequate records of such subjective matters as food preferences. Little quantitative information about American food habits prior to 1900 was recorded, and even the qualitative data available are of dubious accuracy. Literary descriptions of the early American dietary by foreign authors do exist, but, like the account given by Dickens in *Martin Chuzzlewit*, these were based on superficial observations made by fast-moving travelers, and were colored by the natural tendency of visitors from older, more cultured countries abroad, to disdain customs of the then upstart United States. But beginning in 1909, the Department of Agriculture of the United States Government has kept and published reliable records of food consumption in this country. The Department of Agriculture is interested in food habits and consumption because most foods are of agricultural origin, so that food use is a fundamental measure of the farmer's welfare.

Same Bulk: Greater Variety

As indicated previously, statistics of the Department of Agriculture show that the secular trend of total per capita food intake has remained essentially level since 1909. Furthermore, these data reveal that, per capita, the average consumption of a few individual foods has also remained virtually unchanged. In this category are eggs, butter, fats, and total meats (although within the meat group a decline in beef has been offset by a rise in the consumption of pork). Foods that have gained in consumption are milk, citrus fruits, tomatoes, leafy green and yellow vegetables, and sugar. Foods that have declined in use since the turn of the century are potatoes, cereal grains, and apples. Certain compensatory relationships may possibly exist among these changes. Increased use of leafy green and yellow vegetables perhaps corresponds to the decline in potato consumption, and greater use of citrus fruits, arising from co-operative merchandising and improved shipping facilities, may compensate for reduced apple usage. To gain some understanding of the reasons underlying marked changes in the use of certain foods, in contrast to the relative stability in consumption of others, let us examine in detail

one food in each category: eggs, whose per capita use is unchanged; milk, whose use has increased; and potatoes, with declining consumption.

The total annual per capita food intake of 540 pounds given above was stated in terms of moisture-free, solid nutrients. But since most foods contain more than 50 per cent moisture — many exceed 90 per cent — the actual food intake is several times 540 pounds. For example, since 1909, egg consumption has been about 32 pounds (exclusive of shells) per capita per year. Since eggs contain approximately 74 per cent water, this weight of egg magma represents only slightly more than eight pounds of water-free nutrients.

Eggs — A Stable Food

Operators of diversified farms usually maintain chicken flocks as sources of eggs for their own tables, and as an occasional supply of meat when a chicken is slaughtered. Eggs thus available often exceed immediate farm needs, and surplus eggs are a readily marketable commodity. Eggs are but slowly perishable, so that when convenient they may easily be brought to town for sale. Some eggs reaching urban tables, and many eggs used in processing, actually originate in this casual manner. Today, however, most eggs for table use come from specialized poultry farms which are usually located near, or even within, urban foci of consumption. Such farms, jocularly called "egg factories," are designed for maximum egg output, with selection, housing, and feeding of the hens aimed toward this objective. By expediting the gathering and marketing, the efficient operation of specialized poultry farms also reduces the interval between the laying and use of the eggs.

A step forward in the distribution of shell eggs was achieved with the establishment of cold-storage facilities for the purpose of delaying spoilage and thus making marketing more flexible. A still more important advance in distribution has been the development of processing of liquid egg. Such processing involves "breaking out" by hand, in which operation yolks are sometimes separated from whites. The liquid egg is then churned, to establish uniformity, and filtered. A little of this liquid egg finds immediate use, more is dehydrated, but the bulk is quick-frozen. Occasionally, liquid egg is first frozen and then dehydrated later, when drying facilities are available. Such processed eggs, particularly those frozen, are used in vast quantities in baked products, such as noodles, and in mayonnaise, and similar foods in which eggs are an ingredient.

Why have not these fundamental advances in egg production, distribution, and processing increased the total use of eggs in the United States? The principal reason why eggs are a stable product is that improvements in production and storage have been concerned mainly with reducing seasonal fluctuations of egg use within a given year, both by diminishing seasonal peaks of production and by deferring consumption of eggs laid during the high-production months. Since egg production is related to the reproductive cycle of the chicken, egg laying is high in the spring with an extreme peak in April, and low in the early winter with a minimum point in November. Under uncontrolled laying conditions, as in the small chicken flock of the diversified farm, such annual fluctuation of egg output is extreme. Seasonal variation is appreciably reduced under the controlled-laying conditions

of the specialized poultry farm. The greater proportion of eggs currently produced under controlled-laying conditions is evidenced by a comparison of seasonal fluctuation in egg production of 20 years ago as compared with that of today. On the basis that February laying is represented by an index number of 100, two decades ago production would reach a low of 40 in November and a high of 170 in April, whereas today the range is only from 60 to 150.

Variation in seasonal consumption has been reduced even beyond the lessening of laying fluctuations. Originally, when eggs were plentiful during the springtime glut, they were correspondingly inexpensive, and were consumed in large quantities; conversely, during the winter scarcity, eggs were expensive and fewer were used. But now processors purchase eggs during the glut months, and convert them into dried or frozen form which may be stored indefinitely and used later. Cold storage of shell eggs has also helped defer consumption into months of seasonal scarcity.

It must be acknowledged that eggs are recognized by nutritionists as a valuable protective food, and yield a source of essential proteins, vitamins, and minerals. Nevertheless, they have not enjoyed intensive promotion as a health food such as has been devoted, as will be seen presently, to milk, the equally but no more valuable, food. Therefore, promotion has been a minor factor, at most, in influencing egg consumption.

A final and most potent influence in leveling out the seasonal pattern of egg consumption, and perhaps also in retarding greater total consumption, has been the federal



Photo by Harold M. Lambert

Controlled production and effective methods of preservation have greatly reduced seasonal price fluctuations of eggs. But on a per capita basis current consumption is essentially what it was half a century ago.

government's "Support Buying" program. Started in 1929, this program is carried out to protect egg producers against extreme variations in the price of their product, and consequent hardship when prices may fall below cost of production during the months when eggs are abundant. Support Buying involves purchasing of eggs by the government during times of plenitude, and holding them for release later when eggs are scarcer. Support Buying may hold down total egg consumption by discouraging egg processing. The support program keeps egg prices up during the glut months when processors normally operate their plants; for in order to cover processing costs and still compete with shell eggs, processors must obtain their raw material at low cost.

Therefore, although the seasonal pattern of egg production has been leveled out somewhat, and the seasonal pattern of egg consumption has been leveled still more, total egg use has remained substantially unaltered since 1909. Then, as now, the average American consumes about 300 eggs each year.

Milk — A Growing Food

Numerous factors have favored increasing the use of milk in the United States. Among these are not only improvements in production, processing, and distribution, but also effective advertising and sales promotion, and unparalleled advocacy of milk as a health food by interested dairy groups and by disinterested nutritionists alike. Not least among the reasons for greater use of milk is the bland acceptable nature of milk itself. This makes possible the consumption of milk in large quantities, whether as a beverage, or as an ingredient in prepared dishes in the form of milk products.

On the small farm, milk, like eggs, may be produced primarily for table use by the farm family. But unlike eggs, milk is quickly perishable, so that originally milk available beyond the requirements of the farmer's own family usually had to be discarded. Only with the coming of refrigeration could the farmer chill his milk for holding and subsequent sale. Later, embodiment of refrigeration in automobile tank trucks and railroad tank cars facilitated the flow of milk from the rural milkshed to urban population centers. As with eggs, some milk today is gathered from scattered small farms, but much is produced on specialized dairy farms. The efficiency of these dairy farms has been brought to a high point by progress in animal nutrition and in veterinary medicine, fields of learning that lag little, if at all, behind the corresponding spheres of knowledge applied to human beings.

We have mentioned the use of refrigerated trucks and railroad cars in milk transportation. Supplementing these advances in distribution are many recent improvements in milk pasteurization and bottling. Development of high-speed, mechanical pasteurizing and bottling equipment, of lighter and stronger glass milk bottles, and perfection of the paper, single-use milk container, have all contributed to the increased use of milk as a beverage. Even operations of the route man, who brings milk to the user's door, have been facilitated by improved automotive route trucks.

An essential step in the greater use of milk is perfection of the process of pasteurization. Usually performed just before bottling, pasteurization is the application of heat, sufficient in degree and duration, to kill all disease germs and most other microorganisms, and yet the thermal processing must be sufficiently mild so as

not to affect flavor, physical properties, or nutritive values of milk. Pasteurization removes the otherwise ever-present threat of spread of disease by milk. It also markedly delays spoilage.

The advances described have greatly increased the use of fluid milk, but this form alone accounts for only part of the upswing in total milk consumption; the remainder is attributable to concentrated and preserved milks and milk products. Concentrated canned milks are available both as the nonsterile condensed milk that is preserved by a high concentration of sugar, and as the sterilized evaporated milk. Canned milks are widely used in homes, where they supply low cost, nonperishable forms of milk for use in prepared dishes. Dehydrated milks of both whole and skimmed types are widely manufactured, but are used more commercially than domestically. Dried milks are semiperishable products. They require no refrigeration and may be shipped in bulk in ordinary barrels. Cream is frequently preserved by freezing it for later use in the manufacture of ice cream. Finally, a wide variety of cheeses bring milk to the consumer in yet a different form. Preserved milks and milk products are usually made in plants, located near farm sections, operating at peak capacity during the flush months when milk is most plentiful. This method of production, and the ease with which the products may be kept and transported, make concentrated milks and milk products relatively inexpensive. Wide use of milk in these forms is, therefore, favored.

In no small part the increasing use of milk is due to intensive promotion of it as a health food. This program rests on a firm foundation of fact, because milk contains an array of nutritionally essential vitamins, minerals, and proteins of the highest nutritional quality. But, although the gospel of milk's food virtues is true, at least a part of its wide acceptance may be traced to the skillful use of advertising, publicity, and other forms of promotion by large dairy concerns and by associations organized by them. Furthermore, the agricultural bloc, always a powerful factor in government, has been responsible for milk promotion programs carried out by governmental agencies.

The influences described, others not mentioned, and no doubt still others as yet unidentified, have elevated per capita milk consumption in this country from about 150 quarts per year in the first decade of the Twentieth Century to a current figure of more than 250 quarts per year.

Potatoes — A Dwindling Food

The white potato has long figured importantly in the food supplies of most Occidental peoples. Yet this vegetable was unknown in the Eastern Hemisphere until it was brought home by white men who found it under cultivation in South America when the New World was discovered. The cool plateaus of Peru offered ideal growing conditions for potatoes, and the Incas apparently had cultivated this tuber there far back into ancient times. In fact, cultivation of the potato and domestication of the llama, the only beast of burden known in the Americas before the Spaniards brought horses, are considered to be the two major achievements of the Incas.

Potatoes were carried back to Europe by the early Spanish conquerors of South America, but there the tubers remained a curiosity for some time and were seldom



Like bread, milk is a staple product in most meals. As a result of improvements in the processing and distribution of milk, and active promotion of milk as a health beverage, annual milk consumption in the United States during the past four decades has increased from 150 quarts per person to 250 quarts.

Photo by H. Armstrong Roberts

eaten. Early recognition of the economic and food values of the potato resulted in numerous intensive efforts, both on the Continent and in the British Isles, to persuade the people to eat this vegetable. At first such efforts failed everywhere except in Ireland, where potatoes were quickly adopted and soon became the staple crop. Since potatoes are easily grown, detractors then called them "the Irish lazy root." The potato was returned to America from Europe via Bermuda, reaching these shores again in 1621. Potatoes found ready acceptance by the new inhabitants of the hemisphere of their origin, and became a basic food of the United States.

To understand the role of potatoes in the American dietary, we must answer two questions: Why was the potato so readily accepted as a staple food? And why did total use of potatoes later decline sharply? In part, the first question is answered by the ease with which the nutritious roots are cultivated. Since potatoes are easily raised in the climate prevailing in most sections of the United States, they are inexpensive. Potatoes are easily stored between growing seasons. They may be left in the ground for digging, as needed any time, until the ground freezes, or they may be dug and stored in cool root cellars until the next crop is available. Potatoes are likewise readily shipped to market without refrigeration, and may be packed in bags, barrels, or other cheap and plentiful containers. This ease of storing and shipping of potatoes is in strong contrast to similar factors in relation to the succulent vegetables which must be picked at a critical point of maturity, and which wither soon after picking unless special measures are taken.

But the wide use of potatoes goes beyond ease of production, storage, and distribution; in no small measure it depends on the acceptability of the food itself. As has been shown above in discussing milk, bland foods are acceptable to most persons, and are amenable to consumption in large amounts. Consequently, the potential consumption of these roots is enormous. Also, like milk,

potatoes can be prepared for the table in many forms of widely differing tastes, textures, and other gustatory characteristics. In view of all these considerations, it is not surprising that the standard American meal calls for meat, vegetable, and potato.

Then why has the use of potatoes declined during the Twentieth Century? The comparative dwindling popularity of this food is partly the result of its replacement by other vegetables. Cultivation of succulent vegetables is most difficult and more exacting than potato growing, but has been perfected by research conducted by seed growers and by agricultural divisions of state and federal governments. But wider use of non-root vegetables has also been aided by advances in processing and distribution, and particularly by refrigeration facilities now available in fast railroad trains, or recently even in airplanes. During the winter, quickly perishable vegetables may be rushed from those sections of the United States where crops grow all year around to other sections, without appreciable loss of flavor or nutrition. Canning and freezing and, to a limited extent, dehydration also make a wide variety of vegetables available everywhere, all the year around, and at relatively low cost. Thus, the housewife may now find any vegetable she wants during any season of the year, if not in the bins of her green grocer, then in cans on the shelves, or frozen in the low-temperature storage cabinets of retail food stores.

Admittedly, these advances still have not reduced the cost of succulent vegetables to the point where they are, in general, as cheap as potatoes. Since 1909, however, there has been a steady increase in average income with a consequent rise in living standards, so that now more housewives are able to purchase the more expensive vegetables if they wish them.

Factors which are less tangible, and therefore more difficult to measure, in the reduced use of potatoes, are the changes in attitude toward foods as a result of education in nutrition. Early nutritionists (*Concluded on page 438*)

Licking the Language Problem

Modern Pedagogy Saves Time and Wins Support of Students Studying Foreign Languages for Pleasure and for Work. New Program Develops Ability to Read Technical Material

BY WILLIAM N. LOCKE

SCIENCE and technology are often considered to be disciplines of a type so radically different from the arts that there appears to be something contradictory in studying the technical and scientific courses on the one hand, and modern languages on the other.* Some members of the utilitarian school of thought in education even seem to feel that a knowledge of foreign languages, as well as of music and the arts, is but some sort of pseudocultural window dressing. Yet, unless that millennium comes in which English is the truly international vehicle of expression, a knowledge of one or more foreign languages is essential to the man who would be broadly and well educated. It is not possible to overlook the cultural advantages which come from the ability to read and converse in a foreign tongue. Nor are foreign languages less essential to the man who would do advanced and original work in any field of science or in most fields of engineering, and who may regard a knowledge of foreign languages as strictly utilitarian.

The history of teaching foreign languages in the technical colleges, and even in the liberal arts colleges, has been one of gradual decline. In the manner of the liberal arts colleges, the schools of engineering once had an entrance requirement of as much as three years of one, or even two, languages. Within the past two or three decades, however, language requirements in the technical colleges have been gradually whittled away and in some cases have even been eliminated altogether. The curriculum at engineering schools has placed more and more emphasis on the technical side of instruction with a constant diminution of the number of language courses for undergraduates until "only in undergraduate chemical engineering is the study of German often required in engineering schools."** More attention is paid to the study of language in science than in engineering, because so much advanced work in the various sciences has been done abroad. Even in science, however, it is not infrequent that only one year of study of a foreign language is required, and in some cases, departments have been known to re-

* In addition to providing information of more recent developments, this article includes the substance, and is published in place of, the report of the Visiting Committee on the Department of Modern Languages. This Committee met at the Somerset Club in Boston on June 3, 1946. Members for 1945-1946 were: Richard L. Bowditch, '23, chairman, Creighton B. Stanwood, '20, J. Stuart Crandall, '27, Henry G. Doyle, William Emerson, J. D. M. Ford, and Phillips Ketchum. Present at the June 3d meeting at the Somerset Club were Messrs. Bowditch, Ford, and Ketchum, and, as guests of the Committee, also present were President Karl T. Compton, Dean Robert G. Caldwell, and Professor William N. Locke, Head of the Department of Modern Languages.

** Committee on Graduate Study of the Society for the Promotion of Engineering Education, "A Manual of Graduate Study in Engineering," *Journal of Engineering Education*, Vol. 35, No. 10, June, 1945.

The immense value of becoming acquainted with a foreign language is that we are thereby led into a new world of tradition and thought and feeling.

The Task of Social Hygiene
Havelock Ellis

quire of their students only one semester of language study. If one compares the present time to that of a few decades ago, when languages were required for entrance to college and a good reading knowledge of one or more languages was required for college graduation, it is logical to conclude that the pursuit of foreign languages in technical schools and scientific institutions, at least at the undergraduate level, is tending toward extinction.

Only Change Is Certain

Yet, it does not necessarily follow that the pattern of the last few decades will continue unchanged indefinitely. Indeed, there is already evidence that technical education in the past has tended to be too specialized and that it has failed to develop to the fullest the broad philosophical understanding and cultural background which are to be expected of the truly educated person.

The concept of the broad and solid foundation is the very basis for the inclusion of languages and other humanities into the finest technical education. Is there not logic in expecting that a person in possession of an excellent technical training should be equally literate in those studies, customs, and manners which universally mark a person of education and culture? It is the difference in breadth which sets apart the trade from the profession. The graduate of the institutions of science or engineering must take his place in society. Indeed, this is a requirement of increasing importance the more our lives depend upon the products, physical as well as intellectual, of science and engineering. The graduate of a technical institute must move at ease among other educated men and women, and the humanities teach him not to fear the knock on the door of the ivory tower.

Aside from these educationally and culturally desirable objectives, however, there are very practical and utilitarian reasons why an acquaintance with at least one foreign language should be part of the intellectual equipment of every educated person. The engineers and scientists themselves have so shrunk the effective size of the world that no large group of persons can any longer remain isolated from the rest of the world's population. When the extent to which engineers and scientists are



After only one semester of study, students of Spanish go into a class where only the foreign language is spoken. By hearing and speaking the foreign language exclusively throughout the class period, and by studying the language with the aid of records, students make unusually rapid progress. Classes are small so that personal instruction is possible. From left to right are: Milton R. Daniels, Jr., '48, Professor Richard F. Koch, Frank X. Zeimet, '47, Dean H. Weber, '49 (standing), Pekka Ensio, G, and Barron Brainerd, '49.

M.I.T. Photo

responsible for our present mode of living is realized, it is not difficult to believe that the importance to these men of foreign languages (and history might well be included) has sometimes been underestimated. With increased means of communication and travel grows the need for being able to converse with, and understand the culture of, foreign guests in our land, or of our hosts in those lands in which we may be foreigners.

It is perfectly clear that for any traveler to talk intelligently, to understand what he sees and hears in a foreign country, and to be a good emissary of the United States, he must have a great deal of cultural background which will allow him to come into the new situation offered by a foreign civilization with a good deal of tolerance and appreciation. He must have learned that one can never interpret a second civilization exclusively in terms of one's own, and that things which he has always considered as moral and cultural norms may have to be rejected or revised if he is going to make himself acceptable to the society of a foreign country, or if he is going to bring back from that country a true appreciation of its values.

No Traditional Holdover

No, the language requirements for students of science and engineering are no mere holdover of the traditions of a classical education. They are an attempt to inject something humanistic in a course of instruction which is otherwise largely mechanistic. But they are also a recognition of the fact that large bodies of untranslated, and often unabstracted, technical material exist only in several foreign languages. The moment a student begins to do advanced specialized work in any field, he is likely to find that one or more important papers bearing on his subject are unavailable in English. He will have to read technical articles in the original or get someone to translate them for him. The expenses of translation are beyond the means

of most individuals. Even aside from the economic considerations, a translation by someone who does not know the technical field thoroughly is likely to be unsatisfactory, no matter how complete the translator's command of the conversational and literary aspects of the foreign language.

Another wholly desirable result of the study of foreign languages is the attention it focuses on the construction of English. This is particularly evident when men are translating into English, as is done extensively in developing an ability to read technical material. It is a common experience to find that even after the meaning of the passage is thoroughly understood, there still remains a considerable problem of finding the right turn or phrase to express the thought in English. This effort is all to the good, as is anything which makes men more objective with regard to their language.

Every language is a beautiful and useful tool to the people who speak it. To reveal the beauty and make possible the use of a few foreign languages to students at M.I.T. is the work of the Department of Modern Languages. To carry out this work, two separate kinds of language instruction are given in addition to informal assistance in the improvement of speech habits, mannerisms, or accent and inflection for those studying other than their native tongue.† Broadly speaking, the first kind of language instruction, which is taken by undergraduates, is comparable to that of the usual undergraduate language courses and aims to offer foreign languages as a medium of cultural education, as well as a tool for the student's professional advancement. The course of graduate instruction, which is new and has been introduced since World War II, is intended to serve solely as a tool

† This Department also conducts special sections of Freshman English for foreign students who have an insufficient knowledge of our language. To them English is taught as a foreign language, using the same methods by which Americans learn French, German, or Spanish.

As a part of the M.I.T. program for developing ability in speaking foreign languages, the Department of Modern Languages has collections of foreign language records for student use. Speech recording equipment is also in constant use by students who aim at proficiency in spoken languages. In his study of Russian, David F. Tuttle, Jr., G, compares recordings of his pronunciation with that of foreign language records. The Institute hopes to add "visible speech" equipment to its facilities in the near future.



M.I.T. Photo

with which the student may further his knowledge in the chosen professional field by acquainting himself with the advanced work done in foreign countries.

Language in a Dual Role

To the undergraduate, the language is presented with a dual aim. It is, of course, a tool for use in his later professional career, but it is also much more. The language is taught so that it gives the student an introduction to a people; to their mode of life, to their ways of thinking. The undergraduate course recognizes that the student may be required to speak the language, transact business, read the literature, and appreciate the literary expression of a genius of a nation other than his own. In the elementary language courses at M.I.T., undergraduates are given a sound foundation on which to build a broad and cultural understanding; in the intermediate courses the student is introduced to some of the outstanding works of literature as well. These undergraduate courses take full cognizance of the fact that, by the time of his graduation, a student should be educated as well as trained. It also recognizes that the difference between professional and vocational training is more than one of degree. The progression of an individual to the status of a professional person carries with it a connotation of culture and background. The initiation into this culture, the formation of this background, are the province of the humanities of which language is an important element. The undergraduate is not yet too specialized in his professional activities. He can well spend time for broadening himself to recognize and understand the economic, social, and cultural problems of his world.

A New Approach for Graduate Students

In the Graduate School, the situation is somewhat different. Advanced students and research men in science and engineering may be expected to possess those educa-

tional and cultural requirements enumerated for the undergraduate. They have, however, a considerably greater need to consult important technical publications in languages other than their own. To help them get the essential minimum understanding of foreign languages of importance in their profession, new courses in reading scientific French, German, and Russian have been developed at the Institute. This is a completely new type of course with methods adapted to its specific aim of teaching the individual graduate student in one semester to read technical material in his own field.

All doctoral candidates at M.I.T. are required to "demonstrate to the Department of Modern Languages the ability to read scientific literature in their field of specialization in English and in two other modern languages acceptable to the department in which they are enrolled." Master's degree candidates in some fields are required to have a reading knowledge of one modern foreign language. These requirements are met by the translation, at sight, of a page or two of technical material into clear, idiomatic English. But the great problem in this connection has been to evolve a means for enabling the student to get a sufficient knowledge of the technical foreign language to pass an examination, without taking up a great deal of his valuable time.

Until 1945 students were left to their own devices to prepare for the language examinations. To be sure, they could take one or more of the undergraduate courses, the purpose of which (at the elementary stages) was to give a general view of the language and a foundation on which to build a reading or speaking knowledge of the language. These courses were not specifically designed to prepare for reading scientific material, however. If the graduate student could afford to spend sufficient time to go into the third and fourth semesters of the undergraduate language courses, he would read technical material in the various fields. If, as an under- (Continued on page 418)

Organization—A Neglected Science

Application of the Principles of Science to the Organization of Men's Enterprises Is a Fertile, Vast, and Promising Field Awaiting Exploration

BY ALVIN BROWN

IF you ask any business manager what he knows about organization, you will usually find that he knows all about it. If you inquire how he knows about it, you are likely to find that it was born in him. Since this omniscience is common in industry, probably it prevails elsewhere, too.

When I confront you, therefore, with the assertion that organization is a neglected science, I must expect to be put to the proof. It is that proof, rather than the nature of organization itself, which is the subject of this article.

To show that organization, as a science, is neglected, is not my real purpose, however. It is to be hoped that, seeing the neglect, you will decide that it should be repaired. It is my hope that you will decide that organization should be studied; that there is a science to be founded.

There are several ways in which you might challenge this assertion. Even the word, organization, invites some attention, because its different meanings can be misleading. Perhaps you may have to be persuaded that organization is a science. So many people seem to think that organization means imitating others that it will be necessary, further, to show what kind of science it is; that it is deductive, not inductive. It will help to define the scope of the science to point out that, in the manner of its application — its practice — it is also an art. I hope to convince you that organization is important. And, finally, it is my commitment to show that it is neglected. From all of this I hope you will draw the conclusion that organization should be studied.

What Is Organization?

The word, organization, may have a number of meanings. Most of them are entirely valid; but no discussion can be clear if a word is used without certainty of meaning. Let me therefore define the organization of which I speak.

The dictionary gives two definitions: Organization may be the act of arranging or constituting in interdependent parts, each having a special function, act, office, or relation with respect to the whole. Or it may be the state of being so arranged. Both of these meanings have, obviously, a very broad application. The human body is an organization. A body of knowledge may be organized. A school curriculum may be organized. Anything that can be arranged in interdependent parts is capable of organization. As used here, however, organization is that which can be applied to the concerted endeavors of men; it is the organization of the enterprises of men.

An enterprise begins, of course, with a man, or a group of men, who have a purpose. This purpose comes first. To

attain this purpose, human endeavor will be necessary. This endeavor will usually exceed the capacity of the author of the enterprise. It will require the concerted endeavor of other men; perhaps of thousands of men.

It is the mission of organization to concert this endeavor. It is the mission of organization to arrange or constitute the endeavor in interdependent parts, each having a special function, act, office, or relation with respect to the whole enterprise. It is its mission, more briefly, to define jobs and the relations between them. Obviously, this arrangement, this definition, is necessary. The parts of an enterprise do not naturally fall into place. The jobs do not generate themselves spontaneously. The members do not assume their relationships instinctively. To perform the whole endeavor that the purpose requires, the individual endeavors must be concerted. Concert must be a purposive act. This is organization.

Even with respect to the enterprises of men, organization is a word with several meanings. Thus, we speak of organizing a corporation when we incorporate it. This is not organization in the sense in which it is here used. It is only the act which gives legal existence. It is only a step on the threshold of organization. Thus, also, one may speak of organizing his work, in the sense of systematizing it. The use is accurate enough. To arrange one's work in its interdependent parts is, indeed, an act of organization; but it is an object of organization different from the concerted endeavor of men. Even to speak of organizing the work of the members of an enterprise may cause misunderstanding unless one is careful. That kind of organization may relate to methods, to processes, to administration. In so far as it does, it means something different from the definition of jobs and the relations between them.

These nice distinctions have been necessary because an indiscriminating use of the word can be very misleading. Thus, it is almost impossible to tell, from the title of a book, or of a college course, whether it deals with organization in the sense used here, or with the arts and processes of administration. Many a man believes he has mastered the subject of organization, whereas he has really been studying administration, and this may be one of the reasons why organization is a neglected science.

There is one more distinction that must be drawn. This distinction was recognized in the dictionary. Organization may be the act of arranging the parts, or it may be the state of being arranged. It may be the process of creating enterprise, or the structure after creation. We are concerned with the process, that is, the dynamic act of concerting endeavor, not the static, resulting concert. Organization is the process; enterprise is the resulting structure.



Photo by Black Star

Ore carriers, Henry Ford II, and Benson Ford, lie at their home dock in the Rouge Plant at Dearborn, Mich., idled by a strike of maritime workers. It is hardly beyond the realm of possibility that such costly stoppages as have been prevalent in the United States since the end of World War II might be greatly minimized, or even averted, when men's enterprises are organized on a truly scientific basis.

It is not the structure that is a science. It is the process of creating the structure that is a science. For it is a science. Never doubt that. It is a science in the same sense as any field of knowledge.

And yet, is not the meaning of the word stretched? A science is an organized body of knowledge. But the organization of human enterprise has not been organized as a science. It has been neglected. Its principles have not been ascertained and classified. Properly speaking, organization is only an embryo science. Substituting the wish for the fact, however, we may assume that some day it will be formulated and therefore it may be called a science.

It is true that it has not long been regarded as such. Charles DeLano Hine¹ said, as recently as 1912: "Administration as an art is very old. Organization as a science is very new." Indeed, we have a fairly general recognition that there is such a thing as scientific management, but little apparent consciousness of scientific organization. That is why Oliver Sheldon² could say: "In industry most managers are confident that, though

they may have failings, they certainly do not lie in the field of organization. Consequently industrial organization has suffered either neglect or distortion."

From Boston, one approaches the Institute by a bridge over a wide river, and ventures upon it without fear or qualm, without even a thought of what makes it a bridge. But, of course, bridges are not to be taken for granted. A bridge is the handiwork of man. Even more importantly, it is the mental work of man. A bridge, also, is an organization. It is the result of a conscious process applied to natural things and forces. These inanimate things — these elements of steel and stone — have been arranged by principles. If a bridge requires principle, can anyone believe that human beings can be arranged in an enterprise without the use of principle? Can anyone believe that the principles by which men are arranged can be any less a science than the principles by which stones are arranged? Surely, this is true. There must be principles by which human endeavor can be concerted most effectively. These principles will comprise a science of organization.

The corollary of this conclusion, naturally, is that the principles of organization will not be matters of invention. They will not be chance discoveries. Like the principles of any science, they are to be derived by some

¹ Charles DeLano Hine, *Modern Organization*, (New York: Engineering Magazine Company, 1916 edition), page 55.

² Oliver Sheldon, *The Philosophy of Management*, (London: Sir Isaac Pitman, Ltd., 1923), page 102.

rational method. They must be educed, proved, and confirmed. Such is the source of every science.

Organization Is Not an Inductive Science

But where are these principles to be sought? The answer to this question discloses the most grievous mischance that has troubled the science of organization, and the one that has probably contributed the most to its neglect. So many people labor under the notion that the existing structures of enterprise are a guide to organization. It is the case method gone astray. It makes an astonishing assertion. "Existing enterprises," it says, "have such and such a structure; therefore, all enterprise ought to have such and such a structure." It is the fallacy of arguing in a circle; of lifting one by his bootstraps.

Much, too much, that is written and taught about purported organization is of this nature. The authors point to existing structures of organization, and say: "See! That is how you go about organizing." One could as sensibly point to a bridge, and say: "See! There is how you build a bridge." Much more sensibly, indeed, for we may be fairly sure that the bridge has been built by a capable engineer, but we have no assurance that an existing structure of organization has been built by a capable engineer.

Now, a reply to that might well be: "Oh, but the bridge proves it is good by standing. And the enterprise proves that it is good by being successful." It is a plausible answer, but it has two defects.

In the first place, it is not likely that bridges could ever be built by imitation. Conditions differ. The bridge that may serve one need will not serve another. The engineer must return to his principles every time he builds a new bridge, however much the new product may resemble the old. It is impossible to believe that either the author or the engineer could be content to let the proof of the soundness of the structure await its actual use. In the same way, we cannot believe that the author of an enterprise could afford to imitate some other enterprise when his circumstances and his need may be different. Nor can he afford to let the proof of the soundness of his structure await its actual use.

But there is an even greater defect in this answer. It is true enough that, by standing and serving, the bridge is its own proof of the principles that were applied in its building. But does an organizational structure afford the same proof? Let us see.

There are at least four things that will affect the success of an enterprise. Besides organization, there are personnel, administrative method, and external influence. The success or failure of an enterprise is the resultant of these four components. How is one to measure the effect of each of them? If three of them — if perhaps only two of them — are favorable, the enterprise may be successful. It is successful, not because of the other factors, but in spite of them. It would be more successful still if all the factors were favorable.

Business success may be in spite of poor organization; business failure may be in spite of good organization: in either case, by reason of other factors. Nor is success an absolute quantity. Industry does not aim to be merely successful; it aims to be as successful as it can. Permanent success comes only from the highest aim. Not even a successful enterprise can afford to be complacent in the face of the possibility that better organization might yield greater success.

The factors do not have their several, separable effects. They have an aggregate, composite effect in the relative success or failure of the enterprise. None of the factors can be judged, therefore, by its effect. Organization does not present its own proof. It can be appraised only by the test of principle.

Cases can as readily teach error as truth. They tell merely what is; not what ought to be. To generalize upon them is to reach conclusions upon false premises. Inductive reasoning is only as accurate as its material. To say, for example, that many companies "find councils of executives to be useful," is clearly a *non sequitur* in the obvious absence of any standard of usefulness. Rational thinking can say no more than that many companies have councils of executives, and have thus far survived.

Does anyone suppose, either, that the need for clear definition of responsibilities could be concluded by compiling the practices in existing enterprise? Quite the contrary. If one were to judge by the generality of existing enterprise, one would have to conclude that definition is unnecessary, or is necessary only in latent, inferential, hearsay fashion.

The case method, as applied to organization, amounts to a popular vote on what is truth. As to many matters, popular vote will provide a satisfactory answer. In building a bridge, we need an engineer, and a science.

The whole fallacy of the assertion that organization can be devised by the trial and error of businessmen lies in the absence of standards. It lies in the absence of the controls which science demands. It is not a scientific method. The science of organization cannot be built upon such ground.

It Is a Deductive Science

If the principles of organization are not to be decided by the existing structures of enterprise, where, then, shall we look for them? The answer seems plain enough. Organization is required to concert the endeavors of men. It serves to make those endeavors effective. It is, therefore, a means to an end. It is an instrument that serves administration. Like any instrument, it must be adapted to its use. Its nature is to be determined by the nature of its use.

Administration, itself, is a science. It has certain universal requirements. It is in those requirements that the nature of organization is to be sought. Largely, those requirements are self-evident truths. From these the principles of organization may be deduced. Perhaps the most fundamental of these truths is that, presumably, the author of an enterprise desires administration to be as effective as possible. It seems also self-evident that he desires it to be economical. From such truths it is possible to deduce many principles of organization.

It is possible, also, to rationalize the means by which an author enlists additional members in his enterprise, and to deduce therefrom many of the principles which should govern relationships in an enterprise. Even that familiar truth that the sum of the parts is neither more nor less than the whole, however it may be faring in physics, is still valid and useful for organization.

I do not mean that this deductive process is too simple. Compared with many other sciences, however, it is extremely simple. Not to go too far afield, I suggest that, if industry had devoted one-tenth the effort to the study of organization which it has de- (Continued on page 430)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Chairman for Physicists

GEORGE R. HARRISON, Dean of Science at M.I.T., has been elected chairman of the American Institute of Physics. Recently reorganized and changed from a loose federation of the leading national societies in the field of physics to a membership organization,* the American Institute of Physics is the organization for this country's professional physicists. It is composed of the American Physical Society, the Optical Society of America, the Acoustical Society of America, the Society of Rheology, the American Association of Physics Teachers, and about 9,000 individual members.

Dr. Harrison served for several years as president of the Optical Society of America, and in addition to his post of Dean of Science at M.I.T. since 1942, is editor of the *Journal of the Optical Society of America*. His election to the new post comes at a time when plans are being formulated for a new journal in the field of physics.

"Physics is progressing so fast today that neither scientist nor layman can keep abreast of all its phases," said Dr. Harrison. "Many new developments of general interest and application are now reported in technical publications familiar only to specialists in a single field.

"There is an urgent need for a new journal of general interest which gleans material from all branches of physics and reports it to all physicists, to other scientists, and to engineers and others interested in physics. It is such a journal which the American Institute of Physics plans to launch within the next few months. The new journal will serve two major purposes. It will foster cooperation among physicists, and strengthen the feeling of unity in a large profession composed of diverse specialists; and it will inform other scientists and laymen of the most important new developments in one of our most fundamental sciences."

The election of Dean Harrison to this important post is a well-deserved honor and recognition of his leadership in the field of physics.

Biology in a Broad Education

THE statement, made by an internationally known physical chemist, "I believe that the next 20 years will be as great years for biology and medicine as the past 20 have been for physics and chemistry" expresses the view held by many scientists who are aware of developments in fields bordering on biology, as well as by the progressive biologists themselves. It is, therefore, satisfying to find that M.I.T. is pioneering in the field of quantitative and applied biology and that it has a young and able staff in its Department of Biology. On the other hand, it is not satisfying to find inadequate quarters provided at a time when the opportunity open to the Department is so great.

At the request of the Visiting Committee on the De-

partment of Biology**, at its meeting on October 7, 1946, the Department presented its plans, curriculum, and administrative organization. The Committee was most favorably impressed with the program as outlined by the Department representatives, and submits the following findings and recommendations:

The personnel of the Department is young, and the Department appears healthy, showing indications of good integration and teamwork. The application of new physical and chemical techniques to the study of cells and tissues is one of the most promising frontiers of biological science. The activities of the present Department in this field are among the most important going on in the country today.

The Department's effectiveness is limited by its available space. The need for the construction of a new building is immediate and serious. Accordingly, the Committee urges action leading to the early provision of adequate quarters. It recommends that preliminary plans for such a building be drawn immediately.

The Department is not sufficiently well known outside of its professional field, and it is recommended that the Administration consider ways and means of presenting the Department properly to potential students, undergraduate and graduate, in such a manner as to bring the unusual qualifications of the Department to the attention of specially interested and able students.

Anyone entering his lifework today should have a fundamental knowledge of the human organism. It is recommended that the Administration consider including biology as one of the required subjects in the first year, not only because of its importance to this Department or because of its increasing significance in industrial technology, but particularly to provide an essential part of a broad education.

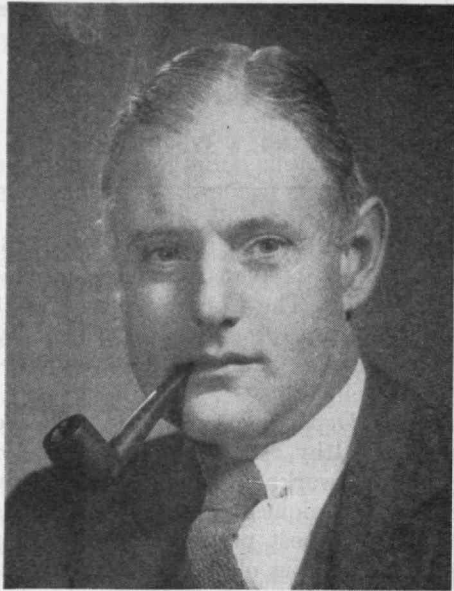
M.I.T. Athletes Do Well

COACHED by Joseph L. Levis, '26, Olympic veteran and formerly national champion in foils, the M.I.T. Fencing Team completed its first season, since its postwar re-establishment, with an undefeated record in its encounters with teams from other colleges in the northeastern part of the country. Harvard and Cornell were the strongest opponents, as the following tabulation of the season's record shows:

M.I.T.....	16	Princeton.....	11
M.I.T.....	14	Harvard.....	13
M.I.T.....	14	Cornell.....	13
M.I.T.....	19½	Boston University..	7½
M.I.T.....	15	Yale.....	12
M.I.T.....	11½	Brown.....	10½

** Members of this Committee for 1945-1946 were: Raymond Stevens, '17, chairman, William J. Mixer, '02, Edward S. Farrow, '20, George B. Darling, '27, James B. Fisk, '31, Detlev W. Bronk, and A. Baird Hastings.

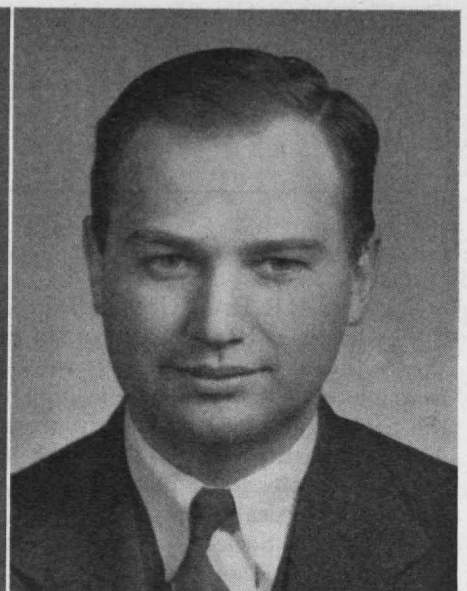
* As recorded in The Technology Review, April, 1947, page 330.



HERBERT L. BECKWITH, '26
Professor of Architectural Design



SAMUEL H. CALDWELL, '25
Professor of Electrical Engineering



IVAN A. GETTING, '33
Professor of Electrical Engineering

Not to be outdone by the fencers, the newly organized Wrestling Team, under the able coaching and guidance of George Myerson, has been crowned New England champion, after taking first place in the 165-pound, 175-pound, and unlimited classes. The M.I.T. wrestlers scored 24 points to win the first postwar New England Intercollegiate Wrestling Tournament, during which they defeated wrestling teams of Williams, Springfield, Wesleyan, Brown, and Tufts.

The Institute's basketball and swimming teams have won more than half of the events in which they were entered and the Hockey Team finished third in the New England Intercollegiate Hockey League. Thus has been completed one of the most successful winter seasons in the history of M.I.T. sports.

All on an intercollegiate basis, the Institute's sports program now includes basketball, crew, cross country,

fencing, golf, hockey, lacrosse, pistol, rifle, soccer, squash, swimming, tennis, track, and wrestling. Since the end of World War II, intercollegiate athletic competition has been resumed in the sports of fencing, hockey, pistol, rifle, and wrestling.

The Forward March

THE largest number of promotions on the M.I.T. faculty for many years was announced by Karl T. Compton, President, recently. Members of the faculty promoted from the rank of associate professor to professor are:

John R. Markham, '18	Department of Aeronautical Engineering
Hsue-Shen Tsien, '36	Department of Aeronautical Engineering



ALBERT G. HILL
Professor of Physics



JAMES HOLT, '19
Professor of Mechanical Engineering



JOHN R. MARKHAM, '18
Professor of Aeronautical Engineering



DEAN PEABODY, JR., '10
Professor of Structural Design



RONALD H. ROBNETT
Professor of Accounting



JOHN T. RULE, '21
Professor of Drawing and Descriptive Geometry

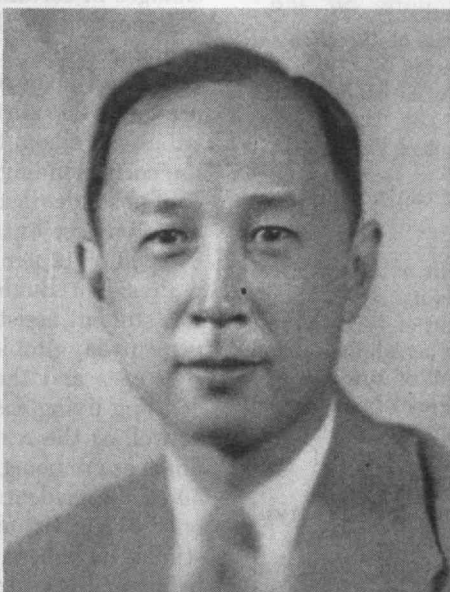
Herbert L. Beckwith, '26 School of Architecture and Planning
Dean Peabody, Jr., '10 Department of Building Engineering and Construction
Ronald H. Robnett Department of Business Engineering and Administration
Paul A. Samuelson Department of Economics and Social Science
Samuel H. Caldwell, '25 Department of Electrical Engineering
Ivan A. Getting, '33 Department of Electrical Engineering
Arthur R. von Hippel Department of Electrical Engineering
John T. Rule, '21 Section of Graphics
James Holt, '19 Department of Mechanical Engineering
Albert G. Hill Department of Physics

Members of the faculty who were promoted from the rank of assistant professor to associate professor are:

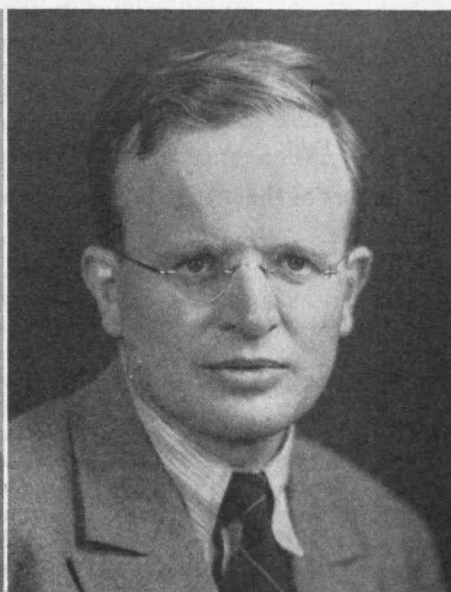
René H. Miller Department of Aeronautical Engineering
William H. Brown, '33 School of Architecture and Planning
Roland B. Greeley School of Architecture and Planning
David F. Waugh Department of Biology
John W. Irvine, Jr., '39 Department of Chemistry
Richard C. Lord, Jr. Department of Chemistry
Clark C. Stephenson Department of Chemistry
Herman J. Shea, '33 Department of Civil and Sanitary Engineering
Jerome B. Wiesner Department of Electrical Engineering
Karl W. Deutsch Department of English and History



PAUL A. SAMUELSON
Professor of Economics



HSUE-SHEN TSIEN, '36
Professor of Aeronautical Engineering



ARTHUR R. VON HIPPEL
Professor of Electrical Engineering

John B. Rae.....	Department of English and History
Cecil G. Dunn, '30.....	Department of Food Technology
Walter L. Whitehead, '13.....	Department of Geology
Ascher H. Shapiro, '38.....	Department of Mechanical Engineering
Herman Feshbach, '42.....	Department of Physics
Clark Goodman, '40.....	Department of Physics

Cecil E. Hall of the Department of Biology has been promoted from the rank of research associate to associate professor.

Promoted to the rank of assistant professor are:

Burnham Kelly, '41.....	School of Architecture and Planning, and the Bemis Foundation
Lloyd Rodwin.....	School of Architecture and Planning
John A. Beckett.....	Department of Business and Engineering Administration
William Van Alan Clark, Jr., '42.....	Department of Business and Engineering Administration
David P. Herron, '41.....	Director, Parlin Station, School of Chemical Engineering Practice
Jack B. Pohlenz, 6-45.....	Director, Bangor Station, School of Chemical Engineering Practice
Keith E. Rumbel, '43.....	Director, Buffalo Station, School of Chemical Engineering Practice
John D. Roberts.....	Department of Chemistry
Myle J. Holley, Jr., '39.....	Department of Civil and Sanitary Engineering
Ariel A. Thomas, '36.....	Department of Civil and Sanitary Engineering
Alexander Bavelas.....	Department of Economics and Social Science
Marcy Eager.....	Department of Electrical Engineering
Roberto M. Fano, '41.....	Department of Electrical Engineering
James N. Thurston, '43.....	Department of Electrical Engineering
Stephen H. Crandall, 2-46.....	Department of Mechanical Engineering
Rogers B. Finch, '41.....	Department of Mechanical Engineering
Fritjof A. Raven.....	Department of Modern Languages
Bernard T. Feld.....	Department of Physics

Members of the staff promoted to the rank of instructor are:

Holt Ashley.....	Department of Aeronautical Engineering
Carroll J. Brown, 9-46.....	Department of Business and Engineering Administration
Leo B. Moore, '37.....	Department of Business and Engineering Administration
Charles G. Swain.....	Department of Chemistry
Melvin A. Biggs.....	Department of Civil and Sanitary Engineering
Elery F. Buckley.....	Department of Electrical Engineering
Wen Tsing Chow, '42.....	Department of Electrical Engineering
David E. Higginbotham.....	Department of Electrical Engineering

James K. Hunton.....	Department of Electrical Engineering
Earl W. Keller, 10-44.....	Department of Electrical Engineering
Morton Loewenthal.....	Department of Electrical Engineering
Richard F. Markel.....	Department of Electrical Engineering
Clarence W. Schultz, 10-44.....	Department of Electrical Engineering
Malcolm F. Thompson.....	Department of Electrical Engineering
Albert B. Van Rennes, 10-44.....	Department of Electrical Engineering
Alden L. Winn.....	Department of Electrical Engineering
Frederick S. Holt.....	Department of Mathematics
John B. Kelly.....	Department of Mathematics
George L. Nelson, '43.....	Department of Mechanical Engineering
James B. Reswick, '43.....	Department of Mechanical Engineering
Abdul J. Abdullah, 6-46.....	Department of Meteorology
John C. Johnson, 6-46.....	Department of Meteorology

Your Health!

MEETING for the first time in its new location, 96 members and guests attended the 255th meeting of the Alumni Council in the Campus Room of the Graduate House on Monday, March 31. At the conclusion of the dinner, an excellent meal, auguring well for the Council's new meeting place, President Bugbee called the meeting to order at 7:00 P.M. Guests introduced at the meeting were Jose C. Bertino, '23, formerly a commander in the Argentine Navy, and Edward M. Peacock, a graduate student in Business and Engineering Administration.

Reporting for Alumni Secretary Charles E. Locke, '96, who was confined to the Infirmary for a few days, Ralph T. Jope, '28, gave an account of activities of the Alumni Office since the January meeting. The treasurer's report showed a favorable gain, although current figures were not comparable with those of former years because of changes in certain of the activities of the Association.

Reporting on the Alumni Fund, Henry B. Kane, '24, announced that the seventh year of the annual Alumni Fund had been completed with 10,003 Alumni contributing a total sum of \$184,846.71. The year's average contribution, amounting to \$18.48, has risen by \$2.00 over the corresponding figure of a year ago. This year's figure is almost identical with that for last year in number of contributors, but the total contributions are up nearly \$20,000 or 12 per cent.

President Bugbee next introduced James Lee Phillips, '47, student assistant in the Dean's Office, who spoke on present-day problems of fraternity life at M.I.T. Housing shortages and the financial matters attendant upon increasing living costs are problems which the fraternities, as well as the rest of us, are facing. Although fraternity finances are being well managed, some of the houses have 50 or 60 residents, in spite of normally accommodating only 20 to 25 students. Especially among students whose studies have been interrupted by the war, efforts are also being made to interest more fraternity men to take part in extracurricular activities.

(Concluded on page 418)

BUSINESS IN MOTION

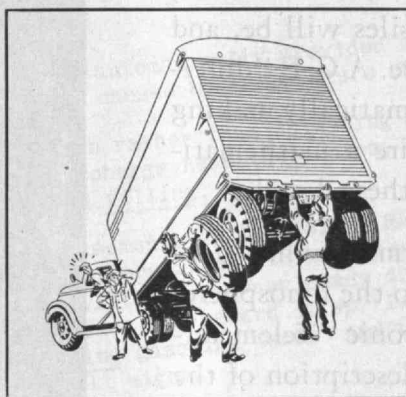
To our Colleagues in American Business . . .

Nearly a year ago a Revere advertisement dramatized the remarkable lightness of truck bodies made of magnesium alloys by use of a whimsical illustration of a husky chap lifting the rear of a truck while another changed a tire. We at Revere and many other people were amused by what everybody thought was an amusing, but impossibly exaggerated drawing.

However, it was not so exaggerated as we thought. Recently a company making truck bodies of Revere magnesium reported an accident to a truck operated by one of its customers. This is what happened, in the words of the body-builder's letter:

"The truck, fully loaded with bread, was hit by another vehicle and knocked down a ten-foot embankment. The truck turned over on its side prior to hitting the bottom of the embankment.

"Five men righted the fully-loaded truck without using any mechanical devices or levers. Examination of the truck after it was righted revealed only very minor damage to the body structure. The principal damage was scraping of paint and one partially dented side door panel. The truck was returned to service immediately, without repairs.



"After one week of service in this condition, the body was returned to our factory for repairs. Total repair charges were only seven dollars.

"We feel that this example of rugged construction of magnesium bodies and their ability to take severe punishment would be of interest to you."

Revere is indeed interested in this new proof of magnesium's strength, but I find still more significant the fact that five men were able to right that truck. Evidently our whimsical drawing was not so impossible as we thought. Here is a case in which imagination came close to prediction.

Imagination is precious. As this incident illustrates, the "wild" idea of today may turn into an advantageous reality tomorrow. Revere has no monopoly on imagination; every worthwhile company uses it to think of new ways to do old things, or new things to do. So I suggest that no matter what you make, nor from whom you buy materials and parts, you keep an open mind toward suppliers, salesmen, inventors, and your own employees. A good idea can come from almost any source, and may make possible better products at lower costs.

Donald Dallas

Chairman of the Board

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

Executive Offices:

230 Park Avenue, New York 17, N. Y.

RESEARCH *One hundred miles high*

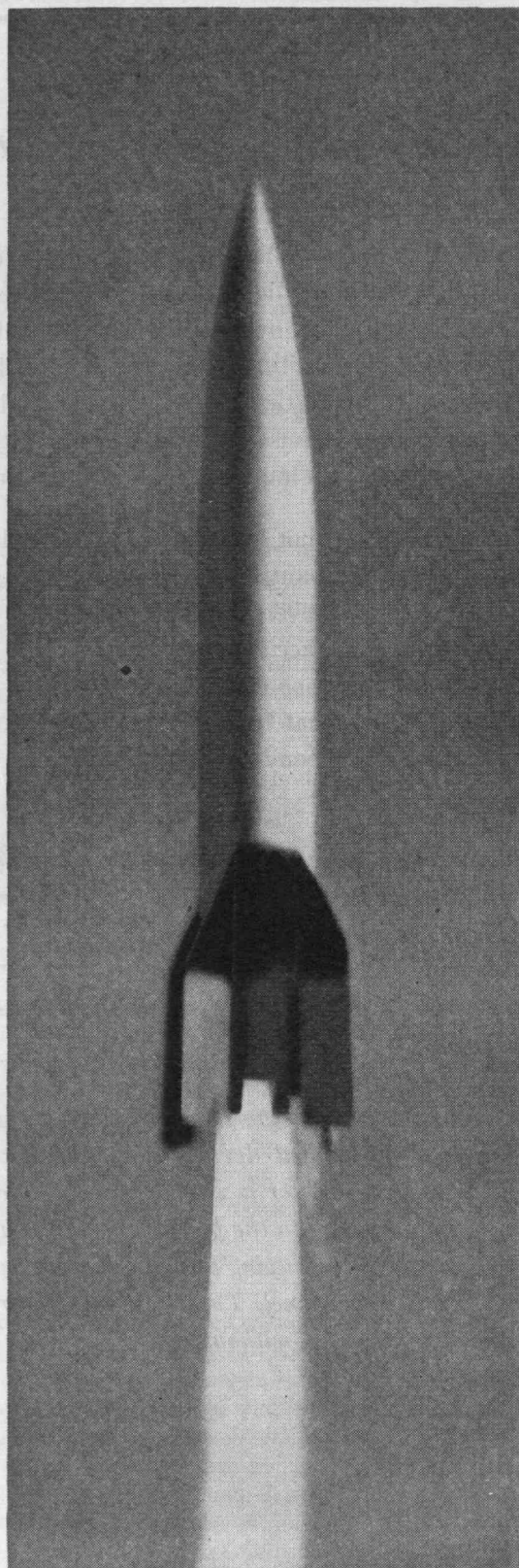
ON the New Mexico desert below the lava-black San Andreas range, men hasten away from the sleek white body of the rocket and crowd behind the ten-foot-thick walls of a block-house. A red flash from a Very pistol signals two minutes to go. The control operator pushes a button, lighting the igniter. Another button, and the rocket, rising on a column of flame, is thrust skyward on its hundred-mile ride into the heavens...

As part of the V-2 research which Army Ordnance is conducting at White Sands, General Electric has been asked to assume responsibility for many of the technical problems of the launchings. The Army needs to know, for instance, what the trajectory of the missiles will be, and how it can be expected to behave. A G-E "differential analyzer," capable of automatically making computations that would require a mathematician weeks of work, figures out these details.

Another problem is to determine what happens to the rocket as it sails into the ionosphere. A newly developed G-E electronic "telemetering" device radios a scientific description of the flight, sending out information about the rocket's acceleration, its temperature, and the position of its control vanes, all of which is picked up by automatic recorders on the ground.

And finally, there has been a problem of reducing the number of costly and time-consuming launchings. General Electric has undertaken development of a "flight simulator," by which information that could be determined in the past only by actual launchings may now be found out in the laboratory.

Thus American Scientists learn about the V-2—how to defend ourselves against it; how, if need be, to build a better one.



GENERAL  ELECTRIC

To Technology Men

in the AUTOMOTIVE INDUSTRY . .

• Do you like spilled gasoline?

Seems strange that such a simple operation in automobile servicing — the filling of the gasoline tank — should be the cause of so much loss in product, time, and temper.

I believe that a well-designed gasoline tank should include the following:

- 1 The ability to take gas at the full pumping speed of the modern commercial pump — substantially 15 gallons a minute — without blow-back.
- 2 Some positive means by which the attendant knows when to stop filling.
- 3 An expansion zone, automatically provided within the tank, to eliminate spillage caused by temperature changes.
- 4 A filler-neck which rather than splashing gas into the top of the tank, will discharge near the bottom, thus eliminating evaporation during filling.

VENTALARM * advertisements in Technology Review have brought us many letters from Tech men dissatisfied with the way their gasoline tanks now fill. A car-owner needs only to realize how unnecessary is the inconvenience and hazard of spilled gasoline, to insist on fast-filling, non-spilling gasoline tanks. And that means tanks equipped with the VENTALARM tank fill signal.

Any Tech man who would like VENTALARM for his own gasoline tank, or who desires to examine its simplicity of construction, is welcome to one with my compliments. (There is an installation expense in equipping old tanks.)

Incidentally, we will be happy to receive any comments you may have on gasoline tank filling.

Yours, for fast-filling, non-spilling gasoline tanks,

Frank P. Scully
M.I.T. '15



P. S. The VENTALARM whistling tank fill signal has been installed on over a million household fuel tanks. Driver never enters home.

Fifteen different makes of automotive equipment now include VENTALARM as standard factory equipment.

*T. M. REG. U. S. PAT. OFF.

SCULLY SIGNAL COMPANY • 88 FIRST STREET, CAMBRIDGE 41, MASS.

THE INSTITUTE GAZETTE

(Concluded from page 414)

Speaking for the Administration, Dr. James R. Killian, Jr., '26, announced that the development of adequate facilities for student housing and recreation was among the top priorities of the Administration and that land west of Massachusetts Avenue was being held in reserve for the development of a center for student housing and recreation. As an immediate step to improve the lot of present students, Dr. Killian stated that Pritchett Hall in Walker Memorial, where the Council formerly met, was being converted into a student lounge. Dr. Killian also announced that President Compton, now visiting alumni clubs in Honolulu and the United States, expected to be back in Cambridge in time to attend the next Council meeting.

Dr. Dana L. Farnsworth, medical director, was then called upon by President Bugbee, to speak on the work of the M.I.T. Medical Department. Comparing modern activities with those of 1913-1914 when Medical Director Dr. John A. Rockwell, '96, reported that 533 consultations were held with 244 students, Dr. Farnsworth stated that last year 32,955 individual calls were made upon the Infirmary for medical aid by students and staff of the Institute. Throughout, the aim of the Medical Department is to prevent disease and illness wherever possible and maintain healthy living, rather than to correct matters after illness has set in. At the same time, every effort is made to carry out the Department's policy of providing full medical services for those at M.I.T. To carry out this policy the present medical staff includes three surgeons under the direction of Dr. John W. Chamberlain, '28, four doctors as internes, and specialists in practically every field of medicine are available for consultation on any type of problem which might arise. The Infirmary has beds for 33 persons at the very modest rate of \$1.00 per day in wards, and \$2.00 per day in private rooms. Although now equipped with splendid laboratories, x-ray equipment, and dental and eye clinics, Dr. Farnsworth said that one of the pressing problems of the Infirmary was for more space to accommodate the increasing use of the Infirmary by the enlarged staff and student body. He commented that present facilities were inadequate to handle contagious diseases and that all cases of this sort which arose were sent to the contagious hospitals in Greater Boston for confinement at a cost to the student far in excess of the prevailing rate at M.I.T. It is planned that the work of the Medical Department will be reported in considerably greater detail in the June issue of *The Review*.

LANGUAGE PROBLEM

(Continued from page 407)

graduate or high school student, he were fortunate enough to have studied some German, and possibly French, then by some careful reading of technical literature, he could prepare himself for the language requirement without taking further courses. Some men with no previous knowledge of the languages they needed even prepared themselves entirely alone, without the help of any courses, and

possibly assisted only by a roommate or friend. It was said that the average amount of time needed to prepare a man through self-study was 250 hours. Thus, the lack of any effective assistance to graduate students in preparing for the reading requirement made it a much more difficult hurdle than it needed to be.

At other technical and scientific schools throughout the country, the problem has been similar. Although there have been some attempts to help graduate students to meet the language requirement, this has generally been accomplished by an extension of the methods already enumerated, and perhaps by having a member of the staff sit down with a few students to read foreign language material with them. The problem has been further complicated by the fact that the men were required to be able to read the literary, as well as the scientific, language, or even instead of the scientific language. It is obvious that there are large differences of construction and vocabulary between these two types of language.

The Promise of a New Approach

At the present time, the graduate student at M.I.T. is required to read only technical material in his own field. Under the new requirements the relative simplicity of the problem made it seem that some simple and direct solution should be possible, and that by the use of experienced teachers the waste motion inevitable in self-study could be avoided, and the time required to fulfill language requirements could be held to a minimum.

In the summer of 1945, the Department of Modern Languages presented to the Graduate School Committee at the Institute a plan for setting up graduate courses in German, French, and Russian. These courses would be open only to graduate students and they were to be only one semester long. They would dispense with the formal study of grammar and would make no attempt to teach the men to speak or to understand the spoken language, but they would concentrate solely on reading technical material in the student's professional field. The question immediately posed for solution was how to instruct, in a single course, graduate students from 10 or 20 different professional fields. The answer was that all the men would meet together once a week for discussion of linguistic peculiarities common to all fields, such as case formation, verb tenses, and sentence structure; then the representatives of each different field were to have separate section meetings twice a week where they would read technical articles.

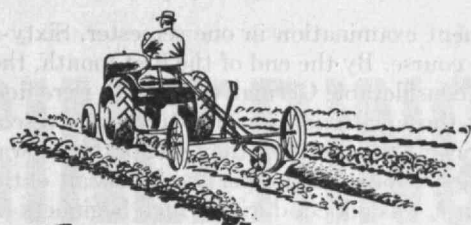
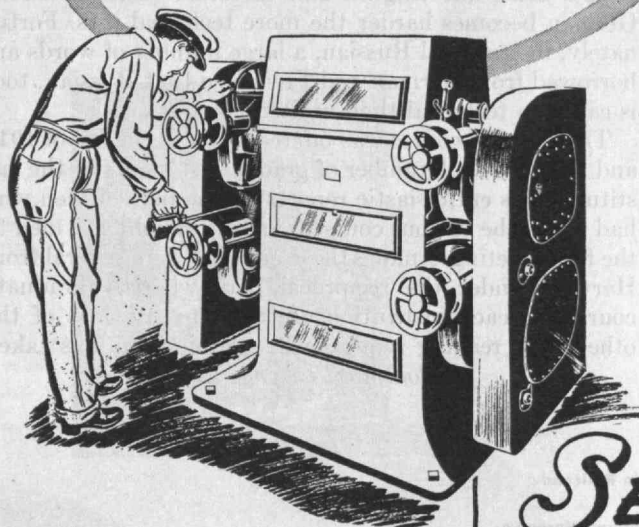
This treatment of language, purely as a tool, has been criticized at the Institute and outside. It is true that modern languages are spoken languages, and that they are reduced to dead languages by neglecting to converse in them. It is also true that language can be an introduction to the civilization of a foreign country, leading to a better understanding of the world and ourselves. Yet what graduate students in science and engineering specifically need is a tool, a key to unlock the door to the scientific literature in a foreign language. To give them this key as quickly and efficiently as possible was the purpose of these new courses.

The first course was in German and was offered in the fall of 1945. Many of the students, and even some of the instructors, had doubts that it would really be possible to accomplish enough to get men ready for the reading

(Continued on page 420)

THE MARCH OF SCIENCE

UNLOCKING SECRETS OF THE SOY BEAN..



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LANGUAGE PROBLEM

(Continued from page 418)

requirement examination in one semester. Sixty-six men took the course. By the end of the first month, those who had had considerable German previously were doing very well, but those with no previous study were discouraged; the intricacy of German thought patterns was overwhelming. A fourth hour per week, on an entirely optional basis, was added, during which beginners (and any others who felt particularly weak) were able to bring up problems, no matter how small, and get them thrashed out in a way which was impossible in the large group where the situation was likely to be to some extent dominated by the majority who had some previous training in German. In the middle of December, the men with the poor background in German, or none, suddenly found that the new course was beginning to be effective. From then on it was obvious that the experiment was going to work and at the end of the semester 62 out of 66 men in the course passed the reading requirement. All but one who had ever had any previous German passed, and of 16 with none, all but three passed. The aim of the course had been achieved. It was possible to teach the reading of technical German in one semester. But another hurdle lay ahead. Could the same thing be done in Russian?

Thirty-six hardy souls started to take the course in Russian in the spring of 1946, many feeling that they were doing it against their better judgment. Several were members of the Institute staff who were taking the language merely for their own satisfaction. At the end of the semester, 23 men took the reading requirement examina-

tion; 16 passed. Even some of those who failed expressed satisfaction at the amount of progress that they had made in the course. The feeling of those who had studied French or German previously seemed to be that, except for the alphabet, scientific Russian is not any harder than scientific German. This should encourage others to attempt Russian, since there is no doubt that in many fields the Russians are now publishing scientific material of great importance. This is particularly true in the chemical engineering field in which doctoral candidates are now being advised to take German and Russian instead of German and French.

Accomplishment

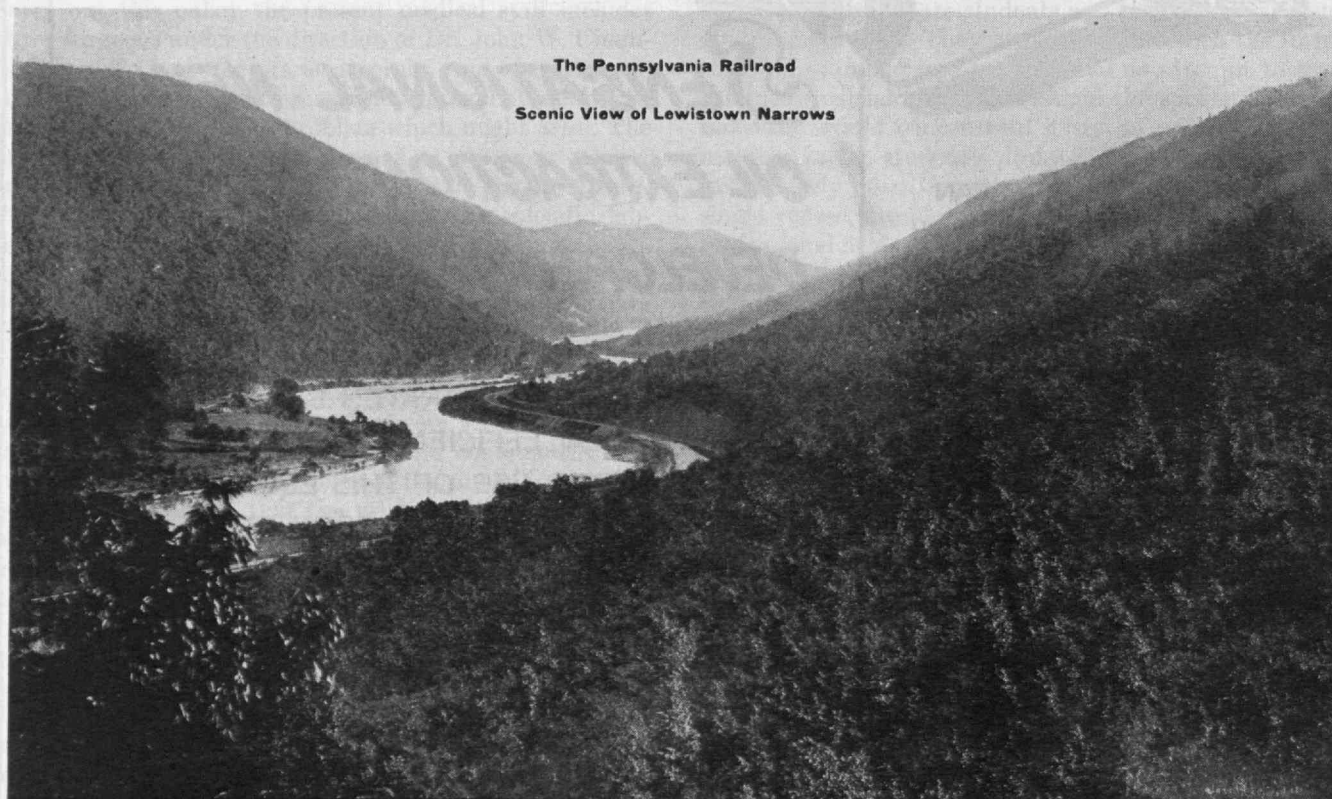
In the same type course given in French in the summer of 1946, of 74 men enrolled, 65 took the examination, and 64 passed. These results seem to prove what everyone always suspected, that as French gets more technical, it gets more like English and therefore easier; whereas German becomes harder the more technical it is. Fortunately, in technical Russian, a large number of words are borrowed from German and French so that Russian, too, is easier in technical than in literary works.

The German course was offered again in the fall of 1946 and the increased number of graduate students at the Institute, plus enthusiastic reports on the part of men who had taken the various courses earlier, brought 143 men to the first meeting. Among those enrolled were several from Harvard under the reciprocal plan whereby graduate courses in each institution are open to students of the other. The reading requirement examination was taken

(Continued on page 422)

The Pennsylvania Railroad

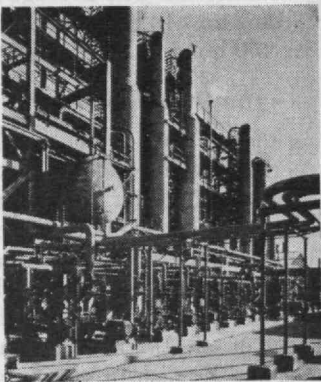
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LANGUAGE PROBLEM

(Continued from page 420)

by 139; 132 passed. The reduction in the percentage failing from six per cent in 1945 to five per cent in 1946 is so small that one could hardly claim any improvement in teaching techniques. However, an increased number of favorable comments on the part of the students, both during the course and after the examination, shows that the course was more effective the second time than the first.

We mention comments from students because never in the experience of men in the Department of Modern Languages at M.I.T. have so many students come in voluntarily to tell how much they enjoyed a course and how much they felt they were getting out of it. One man said he enjoyed the German course more than any other he was taking at the Institute. It must be that the men feel that here is a course which sets out to do something and does it, with constant attention to the purpose and eliminating all extraneous material. The average amount of time spent per man seems now to be about 175 hours, as opposed to the earlier 250 hours.

Sequence — the Only Editing

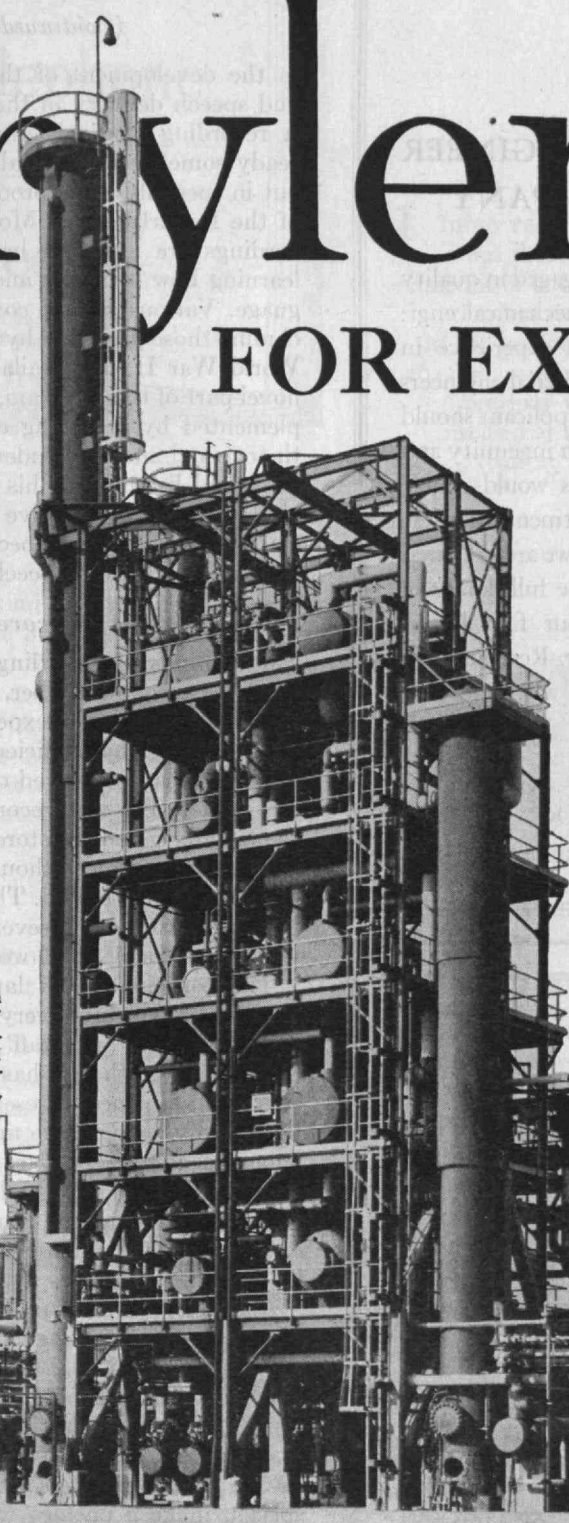
The choice of reading matter used in the reading sections of the courses is perhaps of interest. No textbooks, specialized according to fields of study, are available except in German for chemistry. Even many of these are not satisfactory because the material in them has been edited and simplified. At the Institute, the material used is chosen from foreign books or periodicals, the only editing being the arranging of selections so that the easier ones (that is, those most like English in vocabulary and syntax), are read first. There is no simplification of the original text and nothing is translated from English into the foreign tongue to be retranslated back by the students. All the work is on a mature level, and the later selections in the course represent some of the more advanced work done in the foreign country. Some of it opens up new fields to the graduate students and one doctoral thesis now being written at the Institute is a direct outgrowth of work read by the student in the Aeronautical Engineering section of the German course. Suggestions for the choice of reading material often come from the students, or their own departments, as well as from instructors in language who are constantly on the lookout for new material.

These graduate language courses are tool courses, leaving the cultural values of language study entirely to one side. However, there has been a real need for a practical approach to the language problem of the graduate student in science and engineering. The one-semester scientific reading courses at M.I.T. help him get the reading knowledge he needs in a minimum of time and with the least possible waste motion.


A department at M.I.T. would hardly be complete without a program of research. In the Department of Modern Languages, at the moment, this takes the form of an investigation into the capabilities of new teaching devices. A program is under way jointly with the Departments of Electrical Engineering, English, and Physics to determine the extent to which recordings of students' voices, at various stages of their progress, can help them

(Continued on page 424)

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THE TECHNOLOGY REVIEW
M.I.T., Cambridge 39, Mass.

LANGUAGE PROBLEM

(Continued from page 422)

in the development of the sounds, accents, intonation, and speech delivery in their own or in a foreign tongue. A recording studio is under construction and is to be ready sometime in the fall. Experiments already carried out in specially soundproofed rooms at the headquarters of the Department of Modern Languages show that recordings are likely to be of considerable assistance in learning how to speak and to understand a foreign language. Various sets of commercial language records, including those produced by the United States Army during World War II, are available for the students' use. The novel part of this program, however, is that these are supplemented by recording equipment which records both the original and the student's imitation of it. By playing back and listening to his own recording, the student is able to make an objective comparison, which is normally completely impossible because bone conductivity keeps us from hearing our speech as it sounds to others.

For Improvement of Speech

Two kinds of recording equipment are used for this purpose: a Sound Scribe, designed as an office dictating machine, which uses inexpensive Vinylite discs; and a wire recorder which has sufficient wire for an hour of recording and which can be played over and over again as often as one wishes. The wire recorder has the disadvantage that the records cannot be stored conveniently for purposes of future comparison, although this is possible by dubbing onto a standard record. The fidelity of reproduction with the wire recorder, however, is excellent so that it is very well suited for detailed work in a study of consonants.

The combination of language records and recording equipment has been very popular at the Institute. So many students and staff members have wanted to use these facilities that it has been necessary to have them sign up in advance to reserve the rooms at busy times of day. Oddly enough, the majority of users are not taking language courses but are attempting to improve their ability to understand and speak Spanish or one of the other modern languages for their own satisfaction. All are enthusiastic and seem really to enjoy this approach to language.

Another type of equipment which will soon be available to students of language at M.I.T. is that being developed at the Bell Laboratories incorporating a principle known as "visible speech." In this equipment, speech sounds are broken up into their components at various frequencies. The relative intensities of these components, as one goes from one sound to another in the stream of speech, make a pattern which can be read by the eye. Through the analysis of the patterns produced by this equipment, it is hoped that we may discover many things which until now have remained obscure about the nature of connected speech.

Perhaps the best way to summarize the work in modern languages at the Institute is to say that the cultural and the practical values are recognized and to each is allotted its particular place. They are in no sense contradictory. They supplement each other. What is practical for one may be cultural for the other, and vice versa. For the undergraduate, a foundation is laid which he may ex-

(Concluded on page 426)

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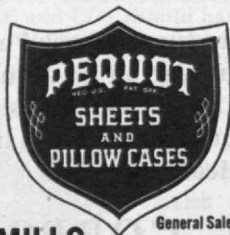
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2 Achievement of this kind reflects the skill, energy and determination of the 617,000 people working together on the Bell System team. What has been done has not been done easily. Many thousands of new employees have been trained in telephone work. It has been necessary to overcome serious difficulties caused by the persistent scarcity of certain essential raw materials needed in large quantities.

3 Most of those who were waiting for Bell telephone service at the start of 1946 had been cared for by the year's end. In addition, the System was able to take care of more than 70 per cent of all new applications received. Yet the total number of new requests for service was so great (there were more than five million) that at the beginning of 1947 there were still about two million people waiting for service.

4 We are working hard to remedy this situation and also to reach the point where all calls can be handled with pre-war speed or better—in short, to give every customer the kind of service he wants when and as he wants it. With experience at hand in abundance, and with new tools and techniques, the Bell System looks forward to steadily increasing achievement in service to the American people.



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LANGUAGE PROBLEM

(Concluded from page 424)

plot later in whatever direction his tastes may lie, and if he wishes, the Department is ready to advise and direct him in his explorations. For the graduate student, a research tool is developed. In both of these lines, aims and methods are flexible, conforming to new requirements, seeking better ways and new aids to more efficient teaching.

NIPPONESE NIGHTMARE

(Continued from page 400)

by main strength and awkwardness over loose planks and rollers as the Pyramids of Egypt were built. Even after the installation of the machinery, the problem of getting materials into such plants and of taking the finished products away, was one that would have made an American plant manager's hair stand on end. There is little doubt that had such rabbit-warren plants succeeded in getting into production, their operating efficiency would have been extremely low.

The long, sad story of the Japanese underground movement will be published eventually in the reports of the Survey. Enough has been said in the preceding paragraphs, however, to show what mistakes were made, and to indicate some of the pitfalls that may be encountered if we are ever faced with the necessity of putting our key industries underground.

There is a good deal of talk these days about push-button and atomic warfare. Most of it is premature. Much of it still lies well in the realm of speculation. One thing is certain, however. If such war does come, it will come with little warning, and only those countries that are prepared to meet it will stand a chance of survival.

This article does not predict any such attack against industry in the United States in the immediate future. There is still a little time. The United States, with all the evidence of the past mistakes of others at its disposal, should draw what lessons it may from the debacle in Japan. We should never permit ourselves to be caught up in a panic type of industrial dispersal if we value our nation's existence. There is no need at the moment to put our key industries underground, but we must lay adequate plans for that eventuality and should develop, with the least possible delay, a certain amount of experience so that we will know how and where to proceed when the emergency comes upon us. It would make good sense at this stage to spend a little time and money to find out what the critical problems really are. We have solutions to some of them readily at hand. There is nothing particularly difficult about heating, lighting, or ventilating the so-called black-out type of industrial plant. Such techniques were well developed during World War II. Add, however, the problem of maintenance of such plants and equipment in remote areas under emergency conditions. Add the problem of housing and feeding thousands of workers underground. Add the problem of transportation (underground, on the surface, or by air) under conditions of actual attack. With little effort, a dozen such questions, at present unanswered, will come to mind. Yet, if we do not know the answers to these questions when the time comes, it will be too late.

(Concluded on page 428)

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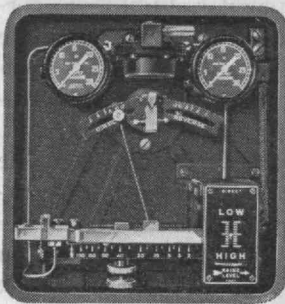
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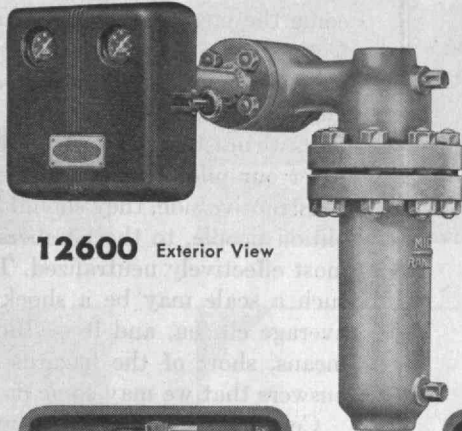
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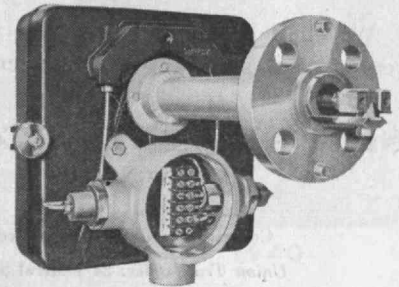
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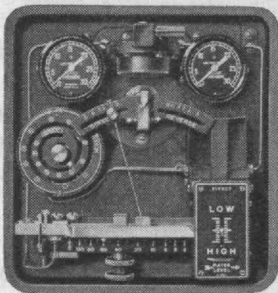
12600 Proportional Controller



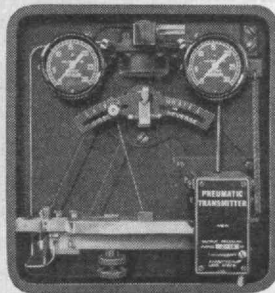
12600 Exterior View



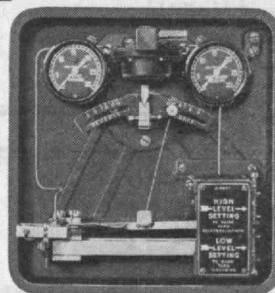
12000-15 Rear View showing Explosion-proof Switch (open)



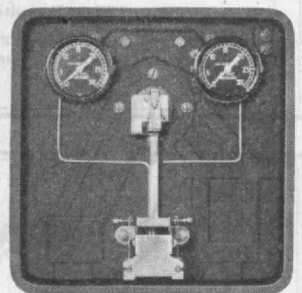
12610 Proportional-Reset Controller



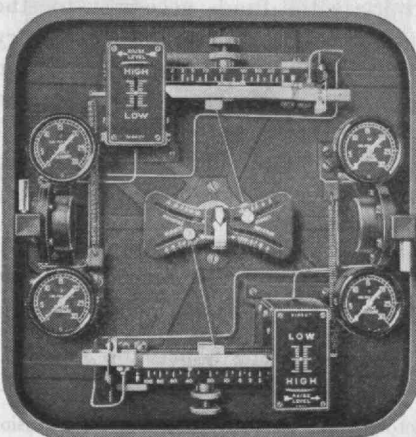
12620 Pneumatic Transmitter



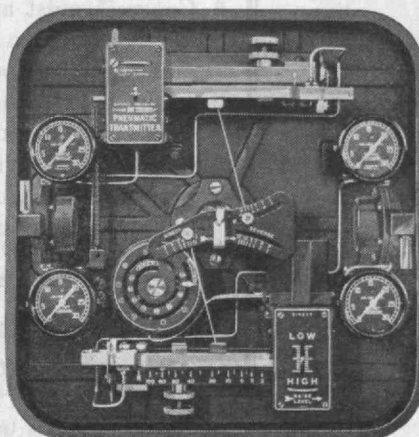
12630 Two-Position Differential-Gap Controller



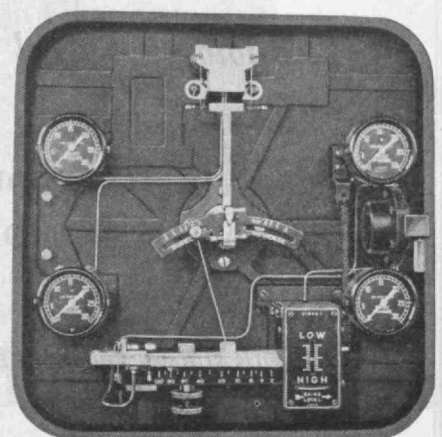
12000-15 Three-Position Pneumatic Signal Switch



12600-00 Duplex Proportional Controller



12610-20 Proportional-Reset Controller & Pneumatic Transmitter



12600-15 Proportional Controller & Three-Position Pneumatic Signal Switch

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NIPPONESE NIGHTMARE

(Concluded from page 426)

We should, without delay, set up a number of pilot plants to produce certain key equipment or matériel underground. They should be located in remote sections of the country, and should be operated under simulated emergency conditions. They should be operated for periods of time sufficient to shake out all the unknown problems — and to provide the answers.

But that is not all. For every defense measure there must be a countermeasure. It is obvious that we are not alone in planning for future underground production plants. Countries who may be on the opposite side of the fence, come the next war, are making similar studies, are perfecting their plans for subterranean factories which we may want to put out of business some day. It is a sad commentary on human behavior, but, under present conditions we must learn how to destroy as well as how to build. After our pilot plants have served their purpose on the constructive side, they should be turned over to the demolition people, to the bombers, to see how they may be most effectively neutralized. To build and to destroy on such a scale may be a shocking bit of business to the average citizen, and it is. But it may well be the only means, short of the hazards of actual war, to provide answers that we may some day need — desperately.

Certainly such an effort will cost money — plenty. Certainly, the average plant efficiency may be expected to be lower than that of existing surface plants. Certainly, we will have labor problems. Certainly, the difficulties of all kinds will be great. But it is equally certain, that it will cost us more in the long run, possibly our very existence, if we don't know the right answers.

One of the greatest initial difficulties in this matter will be that of developing a proper realization of the urgency of this program on the part of the Congress of the United States. Now broken out all over with a rash of economy, Congress must appropriate the funds necessary for the job. A campaign of public education may be a necessary prerequisite. More than anyone else, the engineer can realize the vital necessity for practical experimentation on such a scale. In matters of this sort, which require disciplined thinking and realistic foresight, the engineering profession can, and must, steer the tides of public opinion in proper directions.

MAIL RETURNS

(Concluded from page 386)

"Stepping Stones to Victory" was evidently too late for inclusion in the April issue of the Review, as I feared it might be. Perhaps an early issue might include a statement to the effect that "the opinions or assertions contained in 'Stepping Stones to Victory' are the private ones of the writer and are not to be construed as official or reflecting the views of the Navy Department or of the Naval Services at large."

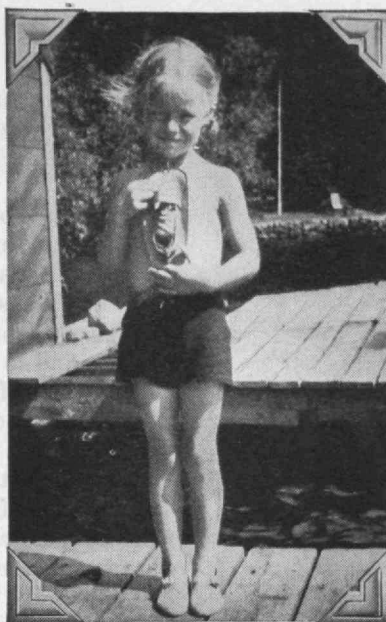
I am very pleased with the way in which the article was presented. However, I was a little disconcerted that Wake Island appeared to be moved from its old position in latitude 19° 15' N., longitude 166° 31' E., to a new location a couple of thousand miles away in the southern hemisphere near Hollandia. The isle we took when the Hollandia strike was made was Wakde.

New York, N. Y.

ALL THINGS HUMAN CHANGE...



1928



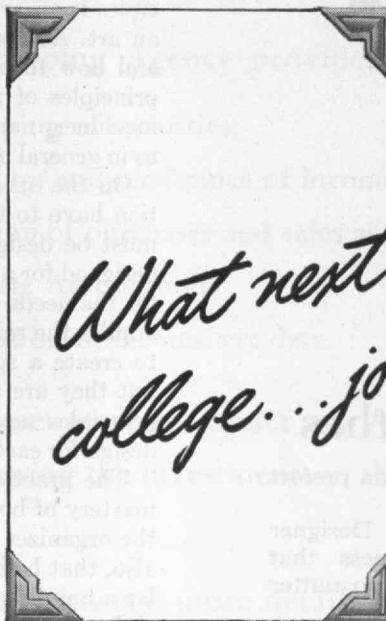
1934



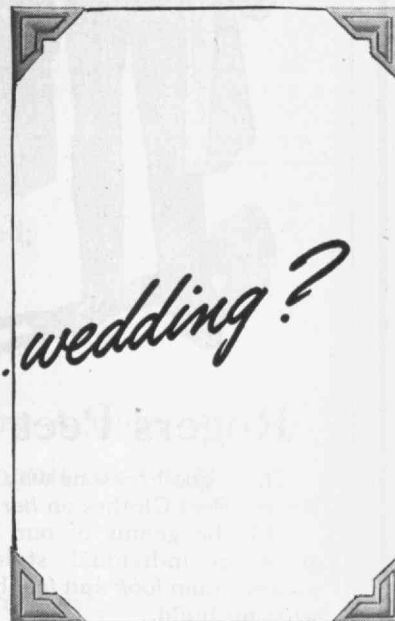
1940



1947



1949



1952

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ORGANIZATION—A NEGLECTED SCIENCE

(Continued from page 410)

voted to manufacturing processes, organization would not be neglected.

It Is Also an Art

You may be asking yourself, however, how an exact science can fulfill the diverse needs of different enterprises. That is a proper question. One of the faults of the case method is that it tends to develop a single, composite design. It proposes to prescribe one medicine for all illnesses, and to clothe every man in the same kind of suit. The science of organization must not fall into that error.

The needs of human enterprise are different. Its purposes cover a wide range. For different purposes, administration must be different. If administration is different, the means of procuring effective administration must also be different. Here, again, we find organization used in two different senses.

As we have been speaking of it, organization is a science of exact principles. But those principles have to be applied to particular cases. This application of the principles is an art. Thus, organization is both a science and an art. As a science, organization should tell us in general how to organize. It should tell us this, just as the principles of mechanics tell us in general how to make machinery; and just as the principles of engineering tell us in general how to build a bridge.

On the other hand, machinery, bridges, and organization have to be used for particular purposes. A machine must be designed for specific service. A bridge must be designed for a specific use. Organization must be designed for the needs of specific administration. In each case, art applies the science. In each case, principles are employed to create a special design. The principles are universal, but they are applied with infinite variation. Though the principles never change, there is undoubtedly one best design for each individual.

The practice of organization depends, therefore, upon mastery of both the science and the art. It demands that the organizer be grounded in the principles. It demands, also, that he have a grasp of the requirements of particular administration, and the ingenuity to apply the principles effectively. Just as the designers of bridges may employ the same principles with greater or less effect, so likewise may organizers.

To emphasize the importance of principle is not to underestimate the importance of skill in application. Practice is as important as principle. But it is no more reasonable to expect to build a bridge by ingenuity alone, than it is to expect to build it by principle alone.

It Is Important

One fact, however, does justify emphasis upon organization as a science. Principle comes before practice. Without principle, there can be no effective practice. On the other hand, there are plenty of ingenious men. Give them principles, and they will do the rest. Give us a science, and the art will take care of itself.

It has been a long time since the individual, unaided by his fellows, has been a significant factor in industrial enterprise. Probably the contribution of individual, inde-

(Continued on page 432)

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ORGANIZATION — A NEGLECTED SCIENCE

(Continued from page 430)

pendent artisans to the total of industrial production is infinitesimal. It has even come to the point where research in the laboratory — yes, even the thinker in his study — depends for success upon association of effort. The time is past when one man, alone, except in unusual cases, can make any significant contribution to human progress.

Human progress depends upon concert of endeavor. For all that we have, for all that we hope to gain, we depend upon associated effort. Civilization depends upon the endeavor of individuals associated in their respective enterprises.

According as that endeavor is better or worse concerted, its fruits will be greater or less. According as that endeavor is better or worse organized, our enterprises will fare better or worse. Can there be any doubt, then, that the manner of concert or endeavor is of great import? Can there be any doubt that its organization is a problem of the highest concern?

Suppose that, by better organization, one-fifth of industrial intelligence could be released for new pursuits. That is not so extreme a supposition as you might think. There is a current fad that worships committees as an agency of administration in the higher levels. Committees are obviously an employment of several men to do what one man might do. Careless use of them, without regard to their natural aptitudes and failings, can entail a fearful waste of personnel resources. It is amazing how careful an enterprise may be with its money and yet how prodigal of its brains.

But suppose only a tenth of industrial intelligence could be saved. Suppose any proportion you wish. As applied to all of industry, any proportion of saving would be a prodigious fact. Any proportion of saving should offer new horizons of industrial accomplishment.

Suppose, again, that, by better organization, each member of an enterprise could know exactly what his job was. Suppose that he never had to pause and consider whether some particular task was his or another's; suppose there were never a task that he neglected because he did not know it was his. Can anyone fail to realize how that enterprise would forge ahead? As applied to all industry, would not such progress be a prodigious fact?

But the importance of organization does not depend

upon proving that enterprises have these defects. It only depends upon realizing that enterprises might have these defects. The bare fact that they might have these defects, and that the cure might achieve such results, is sufficient to confirm the importance of organization as a science.

We can never know whether our concerted endeavors are most effective until we have formulated, accepted, and applied the principles of organization.

It Is Neglected

It is an interesting speculation whether organization is lightly regarded because it has not been thoroughly studied, or whether it has not been thoroughly studied because it is lightly regarded. It is clear enough, however, that it is both lightly regarded and unstudied. A fairly extensive survey shows that probably no more than five or six books have been written that were primarily devoted to organization. It is, of course, much more difficult to survey shorter articles, but these we may dismiss in any event. It is not conceivable that the science of organization could be formulated in a short article. Probably not one of these five or six books masters the science, but that is not the point here. Even if there were five or six books that did, how scant an attention that would be to so important a science!

The *Encyclopaedia Britannica* is a great book. It is a never-failing source of almost inexhaustible knowledge. It will tell you about adding machines, about eschatology, and about zoning. But it will tell you nothing about organization. In the index is "Organization of labour: See Trade unions"; nothing else. There is an article on army organization, but this is only structure; a description of military units and branches. Of organization as a science, the *Encyclopaedia* is unaware.

There are other books, it is true, which make some reference to organization. Generally, these are books on administration. They often fail to identify organization as a separate subject. When they do, it is usually to deal with structure, not with the process by which structures should be created. When they do undertake to deal with principle, it is only as a sidewise glance. It is impossible to accept this as the proper treatment of organization. I do not believe that organization can be the tail on the kite of administration, or that it can fulfill its mission until it has been studied and expounded as a science in its own right.

(Continued on page 434)

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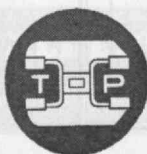
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ORGANIZATION — A NEGLECTED SCIENCE

(Continued from page 432)

For the observation I am about to make, I hope that I may be forgiven. I have no wish to be critical of college curricula. In particular, my remark is not addressed to any one school, and certainly not to the Institute. Such frowardness as may be involved in my remark should be ascribed to my zeal for my subject. I have examined the catalogues of six representative graduate schools of business, hoping to find therein evidences of an appreciation of organization that are lacking elsewhere. These are my findings.

One of the schools has a course in organization, but there is clear evidence in the description of it that it fails to distinguish between organization and administration. Two have courses on "organization and management," in which it is apparent that, although the tail is named first, management, that is, administration, is the kite. In one of these two schools, the course is not given every year. In another two schools there are courses on management which might, upon analysis, show some traces of organization. In the sixth school, no trace can be found. I do not believe that I exaggerate if I say that this is neglect of organization.

If organization is neglected by writers and by schools, it has, of course, no greater attention in industry itself. Perhaps this statement should be qualified. One of our prominent industrial co-operative enterprises says that many businessmen inquire how they ought to organize this or that phase of their endeavors. In this sense, interest in organization is probably more active than it ever was. But, of course, this is not interest in organization as a science. These inquiries only seek to find out what others do, so that they may imitate. They hope to build their bridges, not by application of the principles of engineering, but by copying other bridges. That is no less a neglect of the science because it hopes to enjoy its fruits.

This interest is also belied by acts. One would suppose that, if an enterprise were really interested in organization, it would provide for planning it, the same as it makes provision for its other important concerns. The evidence of such provision is almost wholly lacking. A survey by Holden, Fish, and Smith³ disclosed that only four of 26 large companies make special provision for the planning of organization. Practically the same result was found by the National Industrial Conference Board⁴ — three out of 24.

It Should Be Studied

When we consider the intensive application to most fields of science, and especially when we consider the attention which has been given to such subjects of industrial concern as production, sales, finance, personnel, and indeed, to management or administration itself, we cannot escape the conclusion that the science of organization has been neglected. When we consider, further, the

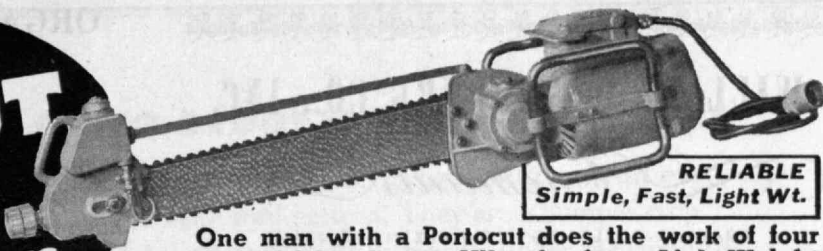
³ Holden, Fish, and Smith, *Top-Management Organization and Control* (Stanford University, Calif.: Stanford University Press, 1941), page 45.

⁴ Thomas A. Fitzgerald, *Organization Standards and Practices* (New York: National Industrial Conference Board, 1946), page 17.

(Concluded on page 436)

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ORGANIZATION — A NEGLECTED SCIENCE

(Concluded from page 434)

great import of organization to our concerted endeavors, we must conclude that this neglect is a sad one.

When I come to this conclusion, I am presented with a dilemma. It is true that I have written a book in which I undertook to formulate the principles of organization. It is true that I wrote the book in full consciousness of the neglect of organization. Apparently, then, I ought to say, either that I have repaired this neglect, or else that the book serves no useful purpose. I do not believe, however, that I have to say either. I have no illusion that one book can make a science. That is a task beyond the capacity of one book or of one man. It is a task that requires many minds. It requires a consensus. I did hope, however, that the writing of the book would help to stimulate interest in the subject, and thus help to begin to end the neglect. If it can make some contribution, however small, to this goal, I shall have all the satisfaction that any man is justified in asking.

Is this neglect of man's endeavors to continue? Shall industry still build its bridges by imitating bridges? Shall we tolerate the notion that what is, is right; and that nothing is to be gained by seeking what ought to be?

This waif of science is on your doorstep. It appeals to your paternal solicitude for all science to give it the shelter which it lacks. Take it in; give it scope; let it grow. Give it place as a science, so that students may be encouraged to study it and to master it. Thus we may hope that man's endeavors will be made more effective by organization.

THE TREND OF AFFAIRS

(Concluded from page 397)

These two made an invincible combination. Their mutual respect grew steadily with time. It was Campbell, familiar with the classical current publications of Oliver Heaviside, who worked out the theory of the loaded line as a solution to the vexing problem of distortion. His formulae prescribing how physically to treat the telephone line to correct this defection are standard today. The fact that Dr. Michael I. Pupin won the patents on this achievement detracts in nowise from this independent brilliant achievement under Hayes's inspiration. At the time it was made, the invention of loading gave to the Bell System the means of saving itself from grave embarrassment.

These illustrations give but a glimpse of the contribution of the Hayes Laboratory to the telephone art. By his understanding selection of men and by his regard for scholarly attributes, he gave to the Bell System a scientific and technological heritage of creative minds. Upon his conception of the importance of research and development largely rests that vast establishment of today known as the Bell Telephone Laboratories.

It is characteristic of the electrical industry that its important developments have been of such recent origin that many of the major contributions to this field have occurred in the memory of men still living. Thus, as in the case of Hayes, the growth and progress of an industry are so closely associated with the career of some of its key men that the two are inseparable.



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AMERICAN FOOD PATTERN*(Concluded from page 404)*

in particular were so enthusiastic about the newly found protective values of leafy green and yellow vegetables and of tomatoes, that they vigorously advocated increased consumption of these foods. This enthusiasm tended to make them ignore the potato, either because they did not recognize its now well-established nutritive values, or because they took it for granted that the consumer would use potatoes liberally. Another element of dietary viewpoint tending to limit potato consumption in certain cases is the entirely fallacious idea that exists in many lay minds of a relationship between potato eating and obesity. With increasingly sedentary existence and a corresponding tendency to overweight, potatoes may often be scorned as fattening, although, in fact, no single food is inherently fattening.

Thus, although potatoes remain a basic staple in the American dietary, the per capita consumption has decreased 25 per cent since 1909. Then the annual consumption of potatoes was close to 200 pounds per capita. Today it is less than 150 pounds.

Will the American food pattern continue to change? Wartime influences are now passing. In time, price and supply relationships will stabilize, shortages should end, and substitutions of unusual foods for the customary but scarce ones should cease. The government's educational program of nutrition (with the theme "U. S. Needs US Strong") which was carried on intensively during World War II has flagged. But conversely the food industries are now bringing up the big guns of specialized promotion of their products, in anticipation of a forthcoming buyers' market in foods. Apparently resumption of the long-term secular trends of the various food groups may be expected, even though points of saturation, or minimum usage, must in time be reached in the instance of foods with rising or falling consumption.

An objective of "High-Level Food Consumption" has been set up by the Bureau of Agricultural Economics of the United States Department of Agriculture. According to the Bureau, high-level food consumption is defined on the basis of two principal considerations. It depends, first of all, on those foods which the nation's people need nutritionally to sustain good health. It depends also, however, on those foods of which our people would like to partake as indicated by food selection and consumption by persons in the higher income brackets. The establishment of universal high-level food consumption in the United States may be expected to improve the health and well-being of the nation's people. But whatever its anticipated efforts, of one thing we may be certain, such a program would require continued change in the American food pattern.

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M. I. T. Graduates who want to locate in his particular area*

ALABAMA

ROBERT C. STOBERT '12, P. O. Drawer 1392, Birmingham

ARKANSAS

LESLIE A. JACKSON '09, Manager, Little Rock Municipal Water System, Little Rock

CALIFORNIA

EDWARD J. RILEY '09, Graybar Electric Company, Inc., Ninth and Howard Streets, San Francisco

FORD W. SAMMIS '28, 433 South Spring Street, Los Angeles 13

COLORADO

ALFRED E. PERLMAN '23, Denver and Rio Grande Western Railroad Company, Denver 1

CONNECTICUT

FREDERICK W. GREEN '32, Nash Engineering Company, Wilson Avenue, South Norwalk (Bridgeport area)

GEORGE L. MYLCHREEST '10, 238 Palm Street, Hartford

CHARLES E. SMITH '00, Railroad Office Building, New Haven

DISTRICT OF COLUMBIA

WILLIAM C. MEHAFFEY '17, 1630 North Greenbrier Street, Arlington, Virginia

FLORIDA

GEORGE W. SIMONS '15, Hildebrandt Building, Jacksonville

CLARENCE P. THAYER '23, 4212 N. W. Sixth Avenue, Miami

FRANKLIN O. ADAMS '07, 305 Morgan Street, Tampa

GEORGIA

WILLIAM E. HUGER '22, 11 Marietta Street, N.W., Atlanta 1

ILLINOIS

ROBERT W. CLYNE '30, American Steel Foundries, 400 North Michigan Ave., Chicago 11

INDIANA

FRANK C. BALKE '14, Balke and Krauss Company, 427 West Market Street, Indianapolis

KANSAS

FRED C. KOCH '22, Winkler-Koch Engineering Co., 335 West Lewis Street, Wichita

KENTUCKY

TINSLEY W. RUCKER III '31, General Plywood Corporation, 32d and Market Streets, Louisville 12

LOUISIANA

THEODORE O. HOTARD '12, 221 Pelican Avenue, New Orleans 14

MAINE

FRANK A. KNIGHT '38, Eastern Corporation, Bangor

LEWIS D. NISBET '09, 44 Montrose Avenue, Portland

MARYLAND

GEORGE W. SPAULDING '21, 1605 Lexington Building, Baltimore 1

MASSACHUSETTS

ROBERT F. BURNETT '10, 85 North Main Street, Fall River

A. RUSSELL PIERCE, JR. '31, Palmer Scott Boatyard, New Bedford

LYNN WETHERILL '25, High Voltage Bushing Engineering Division, General Electric Company, 100 Woodlawn Avenue, Pittsfield

WILLARD A. EMERY '21, Worthington Pump and Machinery Corporation, 37 Appleton Street, Holyoke

MICHIGAN

ADAM K. STRICKER '29, 1227 Bishop Road, Grosse Point Park, Detroit

MINNESOTA

LELAND CLAPPER '09, 5600 London Road, Duluth

CHARLES W. DREW '19, Minneapolis-Honeywell Regulator Company, Minneapolis

MISSOURI

HARRY L. HAVENS '09, Havens Structural Steel Company, 1713 Crystal, Kansas City

WESLEY W. WEDEMEYER '30, Wedemeyer and Hecker, Architects, 319 North Fourth Street, St. Louis 2

MONTANA

WALTER R. C. RUSSERT '18, Anaconda Copper Company, Butte

NEBRASKA

JOHN M. HANLEY '30, Northern Natural Gas Company, Aquila Court Building, Omaha

NEW HAMPSHIRE

BLAYLOCK AHTERTON '24, 142 Main Street, Nashua

NEW JERSEY

GEORGE A. CHUTTER '21, 109 Central Avenue, Glen Rock (Newark area)

NEW YORK

ANDREW F. ALLEN '12, State Department of Health, Albany

THOMAS H. SPELLER '29, General Engineering Company, 785 Hertel Avenue, Buffalo 7

JOHN C. FRUIT '02, Equitable Life Assurance Society of U. S., 393 7th Avenue, New York 1

RAYMOND G. BROWN '16, Comstock and Westcott Inc., Niagara Falls

C. KING CROFTON '22, 1132 Lincoln-Alliance Bank Building, Rochester 4

A. J. TACY '27, Room 645, Building No. 2, General Electric Company, Schenectady

J. MURRAY HASTINGS '13, 606 Hills Building, Syracuse

OHIO

JAMES B. HOLDEN '30, 276 Sundale Road, Akron

KENNETH A. WRIGHT '19, Johnson Service Company, 1905 Dunlap Street, Cincinnati 14

CHARLES B. ROWLEY '12, Charles Bacon Rowley and Associates, Keith Building, Cleveland

JAMES H. BLODGETT '20, Superintendent, Division of Sewage Treatment, Columbus

EUGENE HERZOG '27, 26 Cliff Street, Dayton

CHARLTON P. WHITTIER '27, Owens-Illinois Glass Company, P. O. Box 1035, Toledo 1

OKLAHOMA

W. J. SHERRY '21, 804 Kennedy Building, Tulsa

OREGON

ROBERT E. CUSHMAN '06, 618 N. W., Front Street, Portland 9

PENNSYLVANIA

PERCY TILLSON '06, 3003 North Front Street, Harrisburg

EDWARD J. HEALY '23, Philadelphia Brewing Company, 6th and Clearfield Streets, Philadelphia 33

HAROLD L. LANG '09, Carnegie Institute of Technology, Pittsburgh 13

G. C. WILSON '15, 907 East King Street, Lancaster

LOUIS MORSE '96, York Corporation, Roosevelt Avenue, York

RHODE ISLAND

DONALD G. ROBBINS '07, c/o International Braid Company, 47 Charles Street, Providence

TENNESSEE

DANA M. WOOD '06, 619 Union Building, TVA, Knoxville

DONALD W. SOUTHGATE '11, Nashville Trust Building, Nashville 3

TEXAS

JONATHAN A. NOYES '12, 1914 Commerce Street, Dallas 1

JOSEPH H. McEVoy '21, 202 McGowen Avenue, Houston 6

UTAH

GEORGE M. GADSBY '09, Utah Power and Light, Kearns Building, Salt Lake City

VIRGINIA

DONALD N. FRAZIER '11, 1226 Mutual Building, Richmond

WASHINGTON

HOLLAND H. HOUSTON '24, 215 Fifth Street, Olympia (Seattle area)

HOMER C. BENDER '09, 921 East 19th Street, Spokane

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TECHNOLOGY MEN IN ACTION

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. . . and now, latest of this impressive list of accomplishments, the Alumni have made it possible to build a new Senior House. These structures are essential parts of the Institute's physical plant. There is not a building here which could be spared, the absence of which would not be keenly felt. The swimming pool, for example, was a definite requirement for the training of Navy V-12 students, who constituted the major portion of our student body during the war.

This is only one aspect, of course, of the importance of alumni giving to M.I.T. Scholarships and additions to endowment do not alter the Institute's sky line — nor do the uncounted man-hours given freely in corporation meetings, the deliberations of visiting committees and advisory councils, the interviews of honorary secretaries, the work of class secretaries, class agents, club officers, and a host of others. These contributions of time and energy do not show in annual reports. Yet they are vital to the Institute's well-being. And all of these things, taken together, are largely responsible for the high position which M.I.T. holds today.

* * *

PRESIDENT COMPTON HAS SAID that "M.I.T. stands at the threshold of a period of still greater usefulness" and that it is in a position to "take advantage of opportunities more challenging even than those its founder faced 86 years ago." The operation of the Institute has grown increasingly complex in recent years. The counsel and advice of many men is essential if it is to steer a straight path. Then, too, increasing demands require increased facilities, and material aid is sorely needed. To meet the challenge of the future, M.I.T. needs now, as never before, the assistance which its Alumni have always given it in the past. The Technology of the Future is, in great degree, in your hands.

TECHNOLOGY MEN IN ACTION

M.I.T. MEN AT WAR

Up to April 16 over 9,794 Institute Alumni, including 38 Admirals, 14 Commodores, and 101 Generals, were reported as being in the active naval or military service of the United Nations. There were 343 Alumni who had been decorated, and 232 who had made the supreme sacrifice.

With its issue dated November, 1942, The Technology Review began publishing "M.I.T. MEN AT WAR." Although hostilities have ended, The Review plans to continue this page for the next several months in order to record information on M.I.T. men in the services which, to date, has been impossible to obtain. As a matter of convenience, promotions and corrections in the rank previously given are grouped under a single heading, "Changes in Rank." The Review Editors are greatly indebted to the many Alumni and other readers who are continuing to co-operate so helpfully in reporting inevitable errors of omission and commission which they note in these listings.

DECORATIONS

- | | | | |
|---|--|--|--|
| <p>1916 Lewis, Chester F., <i>Lt. Col.</i>, U.S.A., Degree of Officer in the Order of Civil and Military Merit of Adolph of Nassau; awarded by the government of Luxembourg.</p> <p>1917 Sullivan, William A., <i>Commo.</i>, U.S.N., Croix de Guerre with Palms; Honorary Commander, Order of the British Empire.</p> <p>1919 Hill, Edmund W., <i>Maj. Gen.</i>, U.S.A., Distinguished Service Medal—for service as air inspector.</p> <p>1921 Hewitt, Leland H., <i>Col.</i>, U.S.A., Legion of Merit; Silver Star; Purple Heart.</p> <p>1923 ★ Fleming, Robert W., <i>Capt.</i>, U.S.N., Silver Star—for gallantry in action.</p> <p>1927 Waugh, Sidney B., <i>Capt.</i>, U.S.A., Silver Star; Bronze Star; made a Knight of the Crown of Italy—in recognition of his war service in that country with the Fifth Army.</p> <p>1931 Loucks, Charles E., <i>Brig. Gen.</i>, U.S.A., Distinguished Service Medal—as chief of the industrial division, Chemical Warfare Service; Legion of Merit—for exceptionally meritorious conduct in the performance of outstanding service in the planning, building, and operation of Rocky Mountain Arsenal, Denver, Colo.</p> <p>1934 Johnson, Frederick C., <i>Col.</i>, U.S.A., Bronze Star—in connection with combat in Germany with the 63d infantry division.</p> <p>1940 Yett, Frank A., <i>Lt.</i>, U.S.N., Bronze Star.</p> | <p>Penn, Robert W., <i>Pfc.</i></p> <p>Ponti, Maurice A., Jr., <i>Lt.</i></p> <p>Rader, Albert W., Jr., <i>Pvt.</i></p> <p>Reisener, William C., Jr., <i>Pfc.</i></p> <p>Smith, John A., <i>Pfc.</i></p> <p>Snow, Andrew J., Jr., <i>Pvt.</i></p> <p>Swift, Robert D., <i>Pvt.</i></p> <p>Tewell, William W., Jr., <i>Pvt.</i></p> <p>Vocaturro, Joseph M., <i>T.5.</i></p> <p>Wetmore, Thomas E., <i>Pvt.</i></p> <p>Williamson, Irvine F., <i>Sgt.</i></p> <p>Yancey, Irving P., <i>Pfc.</i></p> <p>1949 Charles, Herbert J., <i>Pvt.</i></p> <p>Dumas, George E., <i>Pvt.</i></p> <p>Emerson, William H., <i>Pvt.</i></p> <p>McLaughlin, George S., Jr., <i>Pvt.</i></p> <p>Moeller, Raymond M., <i>Corp.</i></p> <p>Stefaniak, Edward R., <i>Pfc.</i></p> <p>Van Sant, Oscar J., Jr., <i>Pvt.</i></p> <p>Ahlquist, Arnold H., Jr., <i>T.5.</i></p> <p>Bielecki, Henry J., <i>Pfc.</i></p> <p>Dodaro, George R., <i>Sgt.</i></p> <p>Schek, Donald C., <i>T.4.</i></p> | <p>1926 Danielson, Wilmot A., <i>Brig. Gen.</i> to <i>Gen.</i></p> <p>1932 Wells, William L., <i>1st Lt. to Capt.</i></p> <p>1933 MacMillan, Charles W., <i>Lt. Col.</i> to <i>Col.</i></p> <p>1934 Kraybill, William S., <i>Lt. to Capt.</i></p> <p>Johnson, Frederick C., <i>Lt. Col.</i> to <i>Col.</i></p> <p>Spencer, John H., <i>Maj. to Lt. Col.</i></p> <p>1935 Hansborough, John W., <i>Capt. to Col.</i></p> <p>Kumpe, George, <i>Lt. to Col.</i></p> <p>1936 Carlson, Gunnard W., <i>Capt. to Lt. Col.</i></p> <p>1937 Albiston, Roger C., <i>Maj. to Lt. Col.</i></p> <p>Andelman, Sumner Y., <i>Capt. to Maj.</i></p> <p>Rodenhauser, Jermain F., <i>Lt. Col.</i> to <i>Col.</i></p> <p>1938 Ginsburg, Everett H., <i>2d Lt. to Capt.</i></p> <p>1939 Roper, Willard, <i>Lt. Col. to Col.</i></p> <p>Ferris, John A., <i>Maj. to Lt. Col.</i></p> <p>MacMillan, Latimer W., Jr., <i>Capt. to Maj.</i></p> <p>1940 Rosen, Melvin H., <i>Capt. to Maj.</i></p> <p>Jackson, Kingsbury T., <i>Capt. to Maj.</i></p> <p>Kreiser, Oscar G., <i>Capt. to Lt. Col.</i></p> <p>Orpen, J. Harry, <i>Maj. to Lt. Col.</i></p> <p>1941 Punsalan, Leon F., <i>Lt. to Lt. Col.</i></p> <p>1942 Blakeslee, Harry N., <i>Pvt. to Corp.</i></p> <p>Pentz, Arthur H., <i>1st Lt. to Capt.</i></p> <p>1943 Reebie, Robert S., <i>Lt. to Capt.</i></p> <p>10-44 Ericson, John W., <i>A.S. to 1st Lt.</i></p> <p>Johnson, Melvin A., <i>2d Lt. to Capt.</i></p> <p>6-45 Fisher, Hyman W., <i>Pvt. to S.Sgt.</i></p> <p>1947 Maudlin, Robert V., <i>Pvt. to Lt.</i></p> | <p>Nickerson, Seth C., <i>Lt. to Lt. Comdr.</i></p> <p>Veasey, Alexander C., <i>Lt. Comdr. to Comdr.</i></p> <p>1937 Flynn, Joseph E., <i>Lt. to Comdr.</i></p> <p>1939 Wright, Edward A., <i>Lt. to Comdr.</i></p> <p>1940 Bunke, Paul K., <i>Ens. to Lt.</i></p> <p>Carmick, Edward S., <i>Comdr. to Capt.</i></p> <p>Eisman, Leon P., <i>Lt. to Lt. Comdr.</i></p> <p>Greene, Thomas J., <i>Lt. to Comdr.</i></p> <p>Thewlis, Alan M., <i>Lt. (j.g.) to Lt. Comdr.</i></p> <p>1941 Yett, Frank A., <i>Lt. (j.g.) to Lt.</i></p> <p>Blake, R. Wallace, <i>A.C. to Ens.</i></p> <p>Brown, James A., <i>Lt. Comdr. to Comdr.</i></p> <p>Knapp, Richard P., <i>Lt. to Lt. Comdr.</i></p> <p>Moore, Walter A., Jr., <i>Lt. to Lt. Comdr.</i></p> <p>Petrovic, William F., <i>Lt. to Comdr.</i></p> <p>1942 Kravitz, Marvin R., <i>A.C. to Lt. Comdr.</i></p> <p>Nordin, Theodore P., Jr., <i>Ens. to Lt. (j.g.)</i></p> <p>Shilson, James S., <i>Lt. to Comdr.</i></p> <p>White, Theodore H., <i>Lt. Comdr. to Comdr.</i></p> <p>1943 Shirley, John B., <i>Lt. to Comdr.</i></p> <p>Souder, Paul B., <i>Lt. (j.g.) to Lt. Comdr.</i></p> <p>6-45 Bossler, Franklin B., <i>A.S. to Ens.</i></p> <p>2-46 McKinnell, David J., <i>Mid. to Ens.</i></p> <p>6-46 Thomas, Newell E., <i>Lt. Comdr. to Comdr.</i></p> <p>9-46 Wright, Clarence C., <i>Lt. to Lt. Comdr.</i></p> |
|---|--|--|--|

U.S.N.

- 1935 ★ Lovett, George J., Jr., *Lt.*
- 1937 Anderson, Thomas W., *Comdr.*
- 1939 Diran, Loris M., *Lt. (j.g.)*
- Kettendorf, Henry A., *Lt. Comdr.*
- 10-44 Hamilton, William L., Jr., *Ens.*
- 2-46 Tvedt, Joseph A., *Lt. Comdr.*
- 9-46 Fogg, John K., *Ens.*
- Petersen, Carl A., Jr., *Ens.*
- Restivo, Joe S., *Ens.*
- Riegel, Herbert, *Ens.*
- Roy, Howard A., Jr., *Ens.*
- Shea, Joseph F., *Ens.*
- Stevens, Jean B., *Lt. Comdr.*
- Weymouth, Leon J., Jr., *Ens.*
- Zito, Arthur J., *Ens.*
- 1947 Buegler, Robert J., *Ens.*
- DeBlase, Raymond G., *Ens.*
- Enzler, Arthur J., *Ens.*
- Fritch, Donald J., *E.T.M.2c.*
- Johnson, Leland F., Jr., *Ens.*
- Kincheloe, William R., Jr., *Ens.*
- Kreuzer, Floyd J., *Ens.*
- Paradise, Fred V., *Ens.*
- Sheredy, Joseph, *Ens.*
- Stansfield, Richard J., *Ens.*
- Strider, Donald H., *Ens.*
- Talago, Joseph Jr., *Ens.*
- Watson, Roy D., *Ens.*
- Wentworth, John P., *Ens.*
- 1948 Colvill, George M., *S.1c.*
- Dion, Louis G., *S.1c.*
- Gable, William H., *E.T.M.3c.*
- Moore, Raymond W., Jr., *E.T.M.3c.*
- Peterson, Roland O., *E.T.M.3c.*
- Smith, Markwick K., Jr., *E.T.M.3c.*
- 1949 Cruickshank, Frank S., Jr., *E.T.M.3c.*
- Grafteo, Joseph H. A., *S.1c.*
- O'Connor, Harry N., *Lt. (j.g.)*
- 1950 Burbank, Paul M., *Mid.*
- Finger, Daniel E., *E.T.M.3c.*

U.S.C.G.

- 1949 Beebe-Center, John G., *Cadet*
- 1932 Rudnick, Isadore H., *1st Lt.*
- 1948 Lembeck, Leonard A., *1st Lt.*

CHINA

- 6-45 Tang, Kiang C., *Capt.*

CHANGES IN RANK

U.S.A.

- 1921 Timothy, Patrick H., Jr., *Maj. to Gen.*
- 1924 Stodter, Charles S., *Lt. Col. to Col.*

U.S.N.

- 1919 Saunders, Edward E., *Comdr. to Capt.*
- 1921 Nimitz, Otto, *Comdr. to Capt.*
- 1923 Grant, Lucien M., *Lt. Comdr. to Capt.*
- 1924 McPherson, James G., *Comdr. to Capt.*
- 1926 Avery, Richard W., *Lt. to Lt. Comdr.*
- Hope, Edward S., *Lt. to Lt. Comdr.*
- Whitaker, Francis H., *Lt. Comdr. to Capt.*
- 1927 Turner, Richard C., Jr., *Lt. Comdr. to Comdr.*
- 1928 Farnsworth, Raymond E., *Lt. to Capt.*
- 1929 Ballou, N. Vaughn, *Lt. Comdr. to Comdr.*
- Barnette, Stuart M., *Lt. Comdr. to Comdr.*
- Celler, Frederic A., *Lt. Comdr. to Comdr.*
- Hibbard, Donald L., *Lt. Comdr. to Capt.*
- 1930 Blick, Robert E., *Lt. to Capt.*
- Lockhart, Wilbur M., *Comdr. to Capt.*
- Pyne, Schuyler N., *Comdr. to Capt.*
- 1931 Bennett, Claude H., Jr., *Comdr. to Capt.*
- Smith, Clifton A., *Lt. Comdr. to Comdr.*
- Stewart, William B., *Lt. (j.g.) to Lt. Comdr.*
- 1932 Snyder, Philip W., *Lt. Comdr. to Capt.*
- 1933 Zollars, Allen M., *Lt. to Capt.*
- 1934 Cole, Victor B., *Lt. to Lt. Comdr.*
- Cunha, George M., *Lt. Comdr. to Comdr.*
- 1935 Browne, Oscar M., Jr., *Comdr. to Capt.*
- 1936 Knerr, Hugh S., *Lt. Comdr. to Comdr.*

CANADA

Army

- 1928 Schwartz, James A. E., *S.Ldr. to W.C.*

Navy

- 1939 Graham, R. Barry, *Lt. to Lt. Comdr.*

RANKS NOT

PREVIOUSLY PUBLISHED

U.S.A.

- 1925 Walters, James W., *Col.*
- 1942 Kodis, John W., *Maj.*
- 2-44 Isaacs, Robert M., *1st Lt.*
- 2-46 Hauser, Kenneth J., *2d Lt.*

U.S.N.

- 1943 Ellis, James F., Jr., *Comdr.*

U.S.M.C.

- 2-46 McNicholas, Robert J., *2d Lt.*

LIBERATED PRISONERS

- 1939 Rosen, Melvin H., *Maj.*, U.S.A., — Corregidor
- 1942 Pentz, Arthur H., *Capt.*, U.S.A., — Germany

CASUALTIES

- 1920 ★ Sanger, Donald B., *Col.*, U.S.A.
- 1935 ★ Lovett, George J., Jr., *Lt.*, U.S.N.

★ Killed in Action

* Died in Service

ALUMNI AND OFFICERS IN THE NEWS

Public Patter

¶ By KARL R. KENNISON '08, on the "Extension of Metropolitan District Works: What's Accomplished and What's Ahead," before a joint meeting of the northeastern section of the American Society of Civil Engineers and the Boston Society of Civil Engineers on April 16.

¶ By ERNEST W. DAVIS '12 and THOMAS K. SHERWOOD '24, in a round-table discussion on "The Education of the Engineer," before the Boston section of the American Institute of Electrical Engineers on April 8.

¶ By WILLIAM A. SULLIVAN '17, Commodore, U.S.N., "Hull Down and Bottoms Up," at the silver anniversary dinner meeting of the Engineering Societies of New England on April 29. On this occasion the Societies' New England Award for 1947 was presented to CHARLES S. DRAPER '26.

¶ By AUGUSTUS B. KINZEL '21, on "Alloying Additions to Steel," before the Boston chapter of the American Society for Metals on March 7, with JOHN CHIPMAN, staff, acting as technical chairman and directing the discussion.

¶ By ERIC HODGINS '22, one of the speakers at the Famous Authors Luncheon held on March 10 by the Philadelphia Bulletin.

¶ By EDWARD C. KEANE '22, on a "Review of Current Practice in Design of Subgrades for Runways and Highways," before the transportation section of the Boston Society of Civil Engineers on April 23.

¶ By JOHN S. KEENAN '23, on "Electricity in Canada" at the winter luncheon of the National Electrical Manufacturers Association in Chicago on March 5.

¶ By ALLEN G. SHEPHERD, JR., '30, "High Speed Steel, Part II," on March 25, and by RICHARD F. HARVEY '36, "Cold Work and Hot Work Steels," on March 11, in a series of 12 lectures sponsored by the Rhode Island chapter of the American Society for Metals.

¶ By EARLE BUCKINGHAM, staff, on "What Engineering Schools Can Do to Best Develop Tool Engineers to Fill Industries' Requirements," before the Boston chapter of the American Society of Tool Engineers on April 10.

¶ By LAURENCE BATCHELDER '45, on "Commercial Applications of Sonar Equipment," before the electronics technical group of the American Institute of Electrical Engineers, meeting in Boston on April 15.

¶ By PAUL V. BITZER '31, on "The Application and Operation of Commercial Heat Exchangers," before the Philadelphia-Wilmington section of the committee on junior activities of the American Institute of Engineers, meeting on March 13.

¶ By JACOB P. DEN HARTOG, staff, on "Vibration," before the designers' section of the Boston Society of Civil Engineers on March 12.

Printed Pages

¶ By RICHARD G. BERGER '16, a pamphlet published by the author on *Cancer — Probable Causes and Prevention*.

¶ By THEODORE P. WRIGHT '18, in the *Atlantic Monthly* for April, "The Air Can Be Safer."

¶ By D. G. BRINTON THOMPSON '23, *Ruggles of New York; A Life of Samuel B. Ruggles*, Columbia University Press, 1946.

¶ By WALDEMAR I. BENDZ '28, assisted by Charles A. Scarlott, *Electronics of Industry*, John Wiley and Sons, 1947.

¶ By F. ROLF MORRAL '32, in *Wire and Wire Products* for February, "Corrosion Prevention and Protection."

¶ By DONALD G. FINK '33, *Radar Engineering*, McGraw-Hill Publishing Company, 1947.

¶ By JOHN G. TRUMP '33 and ROBERT J. VAN DE GRAAFF, staff, in the *Journal of Applied Physics* for March, "The Insulation of High Voltages in Vacuum."

¶ By JOSEPH S. LUKESH '36, in the *Journal of Applied Physics* for March, "A Semi-Polar Form of Fourier Series and Its Use in Crystal Structure Analysis."

¶ By NORMAN J. PADELFORD, staff, as editor for the International Relations Division of the Department of Economics and Social Science at M.I.T., *International Relations; A Selection of Current Readings*, No. 1, February, 1947, Technology Press.

DEATHS

* Mentioned in class notes.

¶ MARY CAPEN REYNOLDS '79, January 29.

¶ GEORGE R. UNDERWOOD '83, March 12.*

¶ HAMMOND V. HAYES '85, March 22.*

¶ AUGUSTUS B. STOUGHTON '86, February 12.

¶ FRED W. RANNO '89, July 23.

¶ WILLIAM L. SMITH '89, February 21.*

¶ MORTEN CARLISLE '90, March 10.

¶ RALPH D. COLBURN '91, March 12.

¶ HARRY E. CORMIER '91, March 2.

¶ ELMER G. MANAHAN '92, December 30.*

¶ WALTER P. WHITE '92, February 7, 1946.*

¶ GEORGE W. ANDREWS '93, December 17.

¶ WILFRED A. CLAPP '93, February 10.

¶ FRANK L. CONNABLE '93, March 14.

¶ ALBERT G. ZIMMERMAN '94, February 20.*

¶ JOSEPH C. WALIER '95, December 8.

¶ GEORGE P. HATCH '96, April 4.

¶ CHARLES J. SMYSER '96, July 22, 1943.*

¶ LEWIS H. TAPPAN '96, March 9.*

¶ SUMNER GOWEN '97, February 18.*

¶ HORACE MANNING '97, November 12.

¶ W. EDGAR REED '97, January 25.*

¶ HENRY H. SULLIVAN '98, March 30.

¶ JOHN E. CONGDON '99, March 12.

¶ ROLAND W. STEBBINS '99, December 7.

¶ WILLIS C. BAKER '00, March 23.

¶ FRANCIS H. POUGH '01, September 20.*

¶ HAROLD B. WOOD '01, February 12.*

¶ CHESTER S. ALDRICH '03, November 2.*

¶ ERNEST W. PELTON '03, January 16.*

¶ ROYALL D. BRADBURY '05, March 21.

¶ WILLIAM D. B. MOTTER, JR., '05, March 18.

¶ WINTHROP N. MESSENGER '06, March 25.

¶ ALTON M. COOK '08, March 28.

¶ HAROLD GARDNER '09, January 22.

¶ ISAAC HAUSMAN '11, October 29.*

¶ ARCHIBALD W. LAURIE '12, March 5.

¶ KARL C. MASON '14, March 17.

¶ BURKETT D. NEWTON '16, July 28, 1945.*

¶ AUGUSTUS G. GIGGER '17, November 27.

¶ WILLIAM F. FULLER '20, in 1945.

¶ DOMINIC E. MILONE '23, December 5.

¶ ELLSWORTH S. GRAY '25, April 5.

¶ ROGER W. PARKINSON '25, September 17, 1944.*

¶ LELAND R. VAN WERT '25, March 26, 1945.*

¶ CHARLES S. PAYZANT '27, January 3.

¶ ALBERT E. MULLIKEN '31, March 12.

¶ JOHN G. HOWE '32, June 3.

¶ DAVID G. RABINOW '32, March 14.

¶ W. RUSSELL ALLEN, 3d, '33, February 11.

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Institute of Radio Engineers

The 1947 national convention of the Institute of Radio Engineers was held at the Hotel Commodore and the Grand Central Palace in New York from Monday, March 3, through Thursday, March 6.

Technology men who were made fellows of the I.R.E. were as follows: Robert S. Burnap '16, for his many technical and administrative contributions to the welfare of the institute and radio field as an active chairman or member of numerous technical committees; Edward L. Bowles '22, for his activities in making possible the maximum practical use of advanced radio equipment in military operations and for his work in the educational field; Edward N. Wendell '25, for his contributions to the development and production of radio systems for navigating and landing airplanes by instrument; Donald G. Fink '33, in recognition of his espousal of high standards of technical publishing and for his wartime contributions in the field of electronic aids to navigation; Daniel E. Noble '38, in recognition of his contributions to the design and application of very-high frequency voice communication systems for police and other emergency services.

The following papers were among those presented by Alumni during the technical sessions: "A Study of Tropospheric Reception at 42.8 Megacycles and Meteorological Conditions," by Greenleaf W. Pickard '00 and Harlan T. Stetson, guest; "A Stabilized Magnetron for Beacon Service," by Carl P. Vogel '29 and Barremore B. Brown '42, with J. S. Donal, C. L. Cuccia, and W. J. Dodds; "Propagation Characteristics of the Ultra-High-Frequency (480 to 920-Megacycle) Television Band," by William B. Lodge '30; "The Application of Micro-Waves to the Guidance and Control of Aircraft," by Joseph Lyman '31 and G. Litchford; "An Adjustable Wave-Guide Phase Changer," by A. Gardner Fox '34; "Input Mechanisms for Electronic Digital Computers," by Samuel N. Alexander '35; "Design of Gas-Filled Cold-Cathode Tubes," by Gerald C. Rich '35; "Beam-Deflection Control for Amplifiers and Mixers — Part II — Mixer Tubes for Ultra-High Frequency," by E. W. Herold, Charles W. Mueller '36, and Herbert A. Finke '39; "Synchro-Lite for Television Film Projectors," by L. C. Downes and Joseph F. Wiggin '37; "A Frequency-Modulated Magnetron for Super-High Frequencies," by G. R. Kilgore, Carl I. Shulman '38, and J. Kurshan; "Frequency Modulation and Control by Electron Beams," L. P. Smith and Carl I. Shulman '38; "Applications of Electronic Digital Computers," by Perry O. Crawford, Jr., '39; "The Operational Behavior of a Magnetron Microwave Generator When Coupled to a Long Transmission Line," by William C. Brown '41; "The Electronic Digital Computer," by

Jay W. Forrester '45; "Pulse Amplifiers for Ionization Detection," by Matthew L. Sands, staff; "The Linear Accelerator," by John C. Slater, staff.

Emory L. Chaffee '07, Donald B. Sinclair '31, and Jerrold R. Zacharias, staff, served as chairmen of technical sessions.

M.I.T. Club of Chicago

The second dinner meeting of the club year was held on February 20 at the Electric Club. There was a fine attendance of 79 men to welcome Professor Walter G. Whitman '17, head of the Chemical Engineering Department. President Steinwedell '25 opened the meeting and called on Bob Clyne '30 to tell of the activities of the placement bureau. He requested that anyone with employment vacancies communicate with him. Treasurer van Kirk '18 gave a brief report which indicated that the finances of the Club were in sound condition but that he hoped more dues would be forthcoming. President Steinwedell reported on the plans for the President Compton dinner to be held in April and announced that it would be ladies' night and a gala affair.

After this brief business session, President Steinwedell introduced Robert E. Wilson '16, whose privilege it was to introduce his associate of long standing, Professor Walter G. Whitman. Bob, in his pleasing manner, told of Professor Whitman's brilliant and busy career, with many interesting and humorous side lights thrown in. Professor Whitman gave a most interesting report on the accomplishments of the Chemical Engineering Department during the war and up to the present time and told of his work on the committee on the Graduate School. The new Chemical Engineering Building, he said, affords much-needed space and is a new highlight on the path of progress. This building was constructed in 1940 and was occupied by the Chemical Warfare Service until released by the Army in November, 1945. The Chemical Engineering Department moved into it in January, 1946. Professor Whitman stated that most of the graduate students will complete their programs when they have secured their masters' degrees. The master's degree rounds out the basic work in Chemical Engineering. It appears that greater service can be rendered to students and also more men made available to industry by handling a larger number of men for the master's degree and restricting the enrollment for the doctorate. This latter degree requires about twice the length of time for training that the master's degree does.

The annual meeting will be held in June, when it is hoped that our guest speaker will be the Dean of Science, George R. Harrison. The regular notices will be sent out regarding this meeting. — SIDNEY P. GRIFFIN '20, *Secretary*, Public Service Company of Northern Illinois, 72 West Adams Street, Chicago 3, Ill.

Rocky Mountain M.I.T. Club

The Club is making a sincere effort toward renewed activity. Questionnaires were sent to all Alumni listed in our files as a preliminary measure to determine general interest. About 35 of the possible 90 or so Alumni in the vicinity responded quite favorably and contributed five dollars apiece to support the cause.

Dinner meetings at a local hotel were held in January and February. Considerable interest was shown in getting acquainted and discussing our future plans. Without attempting to make the Club a major activity for the members, we decided to try to have regular monthly meetings on the third Thursday and to vary the type from dinner to luncheon meetings and perhaps summer outdoor meetings at members' homes. Similarly, as the occasion permits, we will show technical movies and have local speakers.

An unimpressive total of 13 members turned out in January, a number encouragingly increased to 22 in February. We feel that, as the group becomes more consistently active and better acquainted, an average of perhaps from 25 to 30 may be expected. Many younger Alumni have been settling in this neighborhood, and it is they to whom we must look for continued activity. Our Club heartily endorses the new alumni relations policy and particularly hopes the Institute will carry forward its program of sending several Technology men in this western direction to address the Club during the year. — ROBERT S. NELSON '40, *Secretary*, 4886 Perry Street, Denver 12, Colo.

Detroit M.I.T. Association

A dinner meeting of the Association was held at the Rackham Memorial Building on March 11. Several men who have recently moved to this region were among those present. The chief feature of the meeting was a discussion by Charles A. Parcells, past President of the Detroit Stock Exchange, on the subject of the value of the security business to the engineering profession. Motion pictures added interest and helped explain his informative talk. An extended question-and-answer period indicated that the speaker had touched on many problems which those present were encountering in the various fields of their activities and felt to be of vital personal concern.

Among those present at the dinner were the following: M. L. Ash, Jr., '26, Chesley Ayers '34, Maynard Bramhall '10, Willis Bugbee '21, J. T. Cronin '17, W. P. Dunlap, Jr., '47, C. T. Ellis '17, H. F. Green '29, T. K. Hine '16, Robert Insley '19, W. P. Kalb '45, H. C. Levine '18, J. E. Longyear '26, J. A. Lucas '39, G. I. McNeil '27, D. B. Martin '25, E. V. Martin '24, R. J. Meier '41, F. H. Rutherford '28, W. B. Scott '44, R. G. Spear '26, D. M. Sutter '26, C. L. Tuller '12, E. W. Upton '43, G. R. Wein-

brenner '40, and L. E. Williams '01. — JOHN T. CRONIN '17, *Secretary*, 198 Monterey Avenue, Highland Park 3, Mich.

M.I.T. Club of Hawaii

The Club held a dinner meeting on March 17 at the Oahu Country Club in Honolulu, to entertain Dr. and Mrs. Compton, who had come to the islands to attend the 40th anniversary celebration of the University of Hawaii. Guests at the dinner included Ernest B. MacNaughton '02, and Harlow Shapley, members of the Corporation, and five or six naval officers from the portion of the Fleet which was in harbor at the time. Dr. Compton addressed the Alumni, their wives, and guests on the many changes which have taken place at the Institute and in Boston. — CLARENCE C. T. LOO '29, *Secretary*, 1316-A Piikoi Street, Honolulu, T.H.

M.I.T. Club of South Texas

Two meetings were held in 1946. A reception and dinner were given on the evening of November 12 honoring James R. Killian, Jr., '26, Vice-president of the Institute. Dr. Killian's address, on the subject "M.I.T. of Today and Tomorrow," was listened to with keen interest by the 42 Alumni present. The meeting was presided over by our Club President, Joseph A. Tennant '13. On December 13 an informal meeting was held at the home of Mr. Tennant to receive Professor Chalmers when he came for a brief visit and conference at Rice Institute.

The name of our group has been officially changed to M.I.T. Club of South Texas. — JOSEPH H. McEVROY '21, *Secretary*, 202 McGowan Avenue, Houston 6, Texas.

Southwestern Association of M.I.T.

On March 4, our Kansas City group held a dinner meeting at the Green Parrot Inn. This was the first time we had met at this place; and although the food was excellent, noise and confusion from an adjoining meeting proved quite disturbing. Twenty-three members attended, five for their first time. James C. Irwin, Jr., '18 said a few words about the regional scholarship and the freshman awards which are granted annually to prospective students. Mr. Irwin announced that Wesley H. Loomis, 3d, '35 is now joining him in his work as honorary secretary.

The speaker was A. N. Chapman, safety engineer for Trans World Airline, Inc. Mr. Chapman explained the duties of a safety engineer, illustrating with specific problems that had confronted him. These were many and varied and proved exceedingly interesting. Next Mr. Chapman dwelt on safety in the air — what has been done in the past and what is now being done to increase safety in air travel. His talk proved to be of great interest to all. The meeting adjourned at 10:30 P.M. — REGINALD W. BULKLEY '27, *Secretary*, 840 Westover Road, Kansas City 2, Mo.

M.I.T. Club of Milwaukee

On February 17, the Club held one of its most interesting meetings since activities were resumed last fall. H. E. Lobdell '17

was the guest of honor and speaker at a dinner meeting held at the University Club. Lobbie informed us on the present status of the Institute and its plans and commitments for the future, a subject which holds great interest for us all. We enjoyed Lobbie's visit and hope he'll stop to see us again soon. William Church, Harold Strow, and John Weinhoff, officials representing secondary schools in Milwaukee, were also our guests, and we hope their interest in our speakers and activities will result in a greater number of Wisconsin students at Technology in the future.

Our membership drive, under the able direction of Pete Heintz '38, is bearing fruit. The attendance on the 17th was the largest to date, and we hope to increase interest in all our future activities. The executive committee has made plans for the rest of the season. A dinner meeting will be held at Miller's Inn on April 4. Jack Wilson, physicist for the Allis-Chalmers Manufacturing Company, will be our guest speaker. We have also tentatively scheduled a dinner dance in May. — WILLIAM HAHN '42, *Secretary*, 750 North 14th Street, Milwaukee 3, Wis.

Technology Club of New York

Unquestionably, the biggest news available at this writing is the club dinner, held at the Architectural League, 115 East 40th Street, on March 5. It was the first we have had at our new quarters, and I think the more than 100 who came went away with a satisfied gastronomical feeling and many interesting side lights provided by Lobbie '17 and other noted orators. Ray Rundlett '22 acted as master of ceremonies and did a grand job. George Dandrow '22, President, made a brief talk in which he outlined club plans for the rest of the year and asked for the co-operation and suggestions of all the members, as well as the many Technology Alumni in Greater New York. Bill Mueser '22 stole the show, with press releases of his many noted accomplishments, as admirably presented by Ray. Although some comment from the floor was noted, we were all delighted to learn of Bill's latest successes.

Former Dean Lobdell forgot momentarily that he had the floor by divine right and came close to limiting his comments to the allotted time. Most of the hecklers had gone home by the time he reached his closing remarks, but enough were on hand to receive Lobbie's closing tributes to the New York alumni club. Many plans to help the various alumni clubs are in the making, and we were all most happy and grateful to have Lobbie with us. Phil Warner '92 was introduced as the oldest Alumnus of this Club present on the occasion.

There has been some discussion on membership. At present, we have but two principal types — resident and nonresident. The amount of dues paid by residents varies according to the length of time elapsed since their graduation. It has been suggested that a new type of membership be considered, one so nominal in price, that all Alumni in the area would be interested. They would have certain privileges, but of course not the same as our present active members, who might possibly become known as sustaining members, in that they

would continue to pay their higher rate of dues. This suggestion is now under consideration by your officers and board of governors. The decision will be announced later, if favorable.

Many plans are in process, the most important of which are more activities. In addition to one or two golf outings, we hope to start a series of monthly outings, or meetings of different kinds, at different places. The golf outing will be in June at the Scarsdale Country Club, and Al Glassett '20 will be host chairman, with Larry Davis '22 as co-host chairman. We are planning an edition of spring news which will shortly be mailed to all Alumni in the area and will give many more details from our activity committee. Ask for your copy.

We are extremely sorry to announce the passing, on December 30, of Elmer G. Manahan '92, at his home in Mount Vernon, N. Y.

Also, we hear, on February 10, Colonel Donald B. Sanger '20, brother of Alan Sanger '18, died very suddenly of a heart attack in California. The Colonel had had a long and most successful career in the Coast Artillery Corps and was later transferred to the General Staff, before being retired for disability.

Those who attended the March meeting, as far as our records show, were the following: W. L. Abramowitz '35, C. A. Allen '33, J. F. Andrews '33, G. T. Bailey '22, W. W. Bainbridge '22, H. F. Ballard '09, A. B. Bassett '26, J. B. Bell '27, Harold Birnbaum '47, J. R. Bonnar '27, G. W. Bricker, Jr., '23, F. B. Briggs '22, E. S. Burdell '20, J. B. Calkin '32, H. B. Chalmers '00, C. E. Chase '03, W. E. R. Covell '23, C. B. Dale '43, C. G. Dandrow '22, L. B. Davis '22, B. K. Duffy '41, J. M. Evans '16, S. W. Fletcher '18, L. H. Flett '18, W. R. Franklin '26, A. J. Freiheit '22, J. C. Fruit '02, F. D. Gage '22, Joseph Givner '22, A. T. Glassett '20, G. P. Grant, Jr., '35, C. D. Grover '22, John Guinan '30, H. G. Hamilton, Jr., '29, R. S. Hamilton '24, J. M. Hazard '29, R. F. Hibbert '27, A. P. L. Hotte '42, and G. H. Hotte '43.

Also present were these men: A. H. Jansson '07, L. G. Jones '40, S. J. Judson '18, J. A. Kelley '18, W. F. Kennedy '21, W. L. Keplinger, Jr., '24, E. H. Koontz '36, Nathaniel Krass '18, W. G. Kussmaul, Jr., '41, R. F. Lathlaen '46, C. J. le Bell '26, W. J. Littlefield '17, G. K. Lister '30, John Lowe, 3d, '37, J. A. Lyles '27, J. P. McCarthy '25, W. I. McNeill '17, Edward McSweeney, Jr., '23, E. H. Mangan '12, V. G. Mooradian '34, C. W. Morrison '08, W. H. Mueser '22, J. J. Murphy '23, James Nesmith, 2d, '22, D. A. Ostrower '45, Miles Pennybacker '23, E. A. Reinhardt '22, S. H. Reynolds '22, J. E. Ricks '30, H. E. Rockefeller '22, E. S. Rowell '33, R. C. Rundlett '22, M. R. Scharff '09, S. A. Scharff '43, Nathan Schooler '24, H. R. Schwarz '34, Manuel Shampianier '22, H. G. Shea '24, D. D. Spoor '22, A. J. Tabet '29 (from Cairo, Egypt), S. J. Tankoos, Jr., '43, W. P. Van Nostrand '42, G. R. Wadleigh '97, P. A. Warner '92, K. E. Wenk, Jr., '42, Edward Wininger '24, W. L. Wise, Jr., '34, Paul Wiswall '09, H. B. Zeiger '24, and J. H. Zimmerman '23. — WILLIAM W. QUARLES, *Secretary*, McGraw-Hill Publishing Company, 330 West 42d Street, New York 18, N. Y.

M.I.T. Club of Philadelphia

President Compton has accepted our invitation to be the principal speaker at our 50th anniversary dinner meeting at Wilmington on Tuesday, May 20. The meeting will be held at the Hotel Du Pont, beginning at about 7:00 P.M. Other arrangements for this milestone in our history are being made at the time these notes are written, and we hope that all Alumni in the area will be able to attend and help us celebrate the occasion. More than 300 can be accommodated; so consider this an invitation whether you are a member of our Club or not. Guests are welcome, too.

This will be the first meeting the Club has had in Wilmington since December, 1939. Our Wilmingtonians have commuted to Philadelphia so loyally during the war years, let's see that the Philadelphians return the compliment and invade Wilmington by car, plane, boat, and train. — ROBERT M. HARBECK '28, *Secretary*, 605 Foss Avenue, Drexel Hill, Pa. *Assistant Secretaries*: SAMUEL K. MCCAULEY '41, 288 Copley Road, Upper Darby, Pa.; WILEY F. CORL, JR., '39, Box 358, Bryn Mawr, Pa.

Berkshire County M.I.T. Club

On March 13, a dinner meeting was held at 6:30 P.M. at the Busy Bee Restaurant on West Street in Pittsfield. Thirty-two Alumni were present, including two Alumnae, representing approximately 25 per cent of the potential Berkshire County group. This was the first meeting held since 1937. Professor Locke '96, was our guest and relayed news and trends at the Institute, interspersed with anecdotes. The speaker of the evening was Chauncey C. Loomis, President of the New England Lime Company, a Harvard graduate and chemist. Mr. Loomis told an interesting story of the experience of his company as operators of a government-owned magnesium plant in the near-by town of Canaan, Conn. His subject matter included a review of the alternate processes, the economics involved, and a personal estimate of the future of the magnesium industry.

Officers of the organization were elected during the meeting: for president, Aram H. Boyajian '44, and for secretary-treasurer, Garnett H. Porter '18. The retiring officers were Lynn Wetherill '25, President, William L. Root, Jr., '35, Secretary-Treasurer, and Walter E. Lennon '22 and Walter S. Aiken '16, Vice-presidents. — GARNETT H. PORTER '18, *Secretary*, General Electric Company, 100 Woodlawn Avenue, Pittsfield, Mass.

M.I.T. Club of Rochester

Bureaucracy in the Greek Government is one of the primary problems of Greece, along with the nearly complete disruption of food supplies and transportation. Hiram Sibley told our Club at its meeting in the Charterbox Club on February 25. Hiram Sibley (Harvard '31), who is a member of the Harper Sibley firm in Rochester, has only recently returned from a 21-month term as administrative officer in Northern Greece for the United Nations Relief and Rehabilitation Administration, an assignment which gave him an extraordinarily clear picture of one of our major problems.

The U.N.R.R.A. sponsored a British-American survey of Greece's problems, and the report recently released calls special attention to the need for (1) alleviating the current food shortage, (2) rehabilitating industry, (3) checking the severe inflation, (4) restoring export markets, and (5) undertaking a long-term hydroelectric development to increase agricultural and industrial opportunities. We must decide whether we wish to furnish some support for such a program — adequately safeguarded to be certain the money is used properly and not wasted by an inefficient government — or permit the country to lapse into complete chaos. Such chaos would precipitate a communist revolution in Greece and probably lead to the formation of another police state in the Russian sphere. The United States is the only nation able to help Greece, Sibley said, and Greece can never repay the money we advance.

Most of the Greek people are in the middle, confused and resigned, between small royalist and small communist factions. They are thoroughly glad to have a few British troops there, being frightened to death of their Russian neighbors, whose breath they feel upon their necks! The British have been overzealously impartial — a very difficult policy in the face of the inefficient, wrangling government that is united against the communists and split on every other issue.

Transportation has been thoroughly wrecked; the Germans blew up every locomotive in Greece and burned more than 5,000 cars. Practically every bridge in mountainous Greece has been demolished. (The pessimistic Greeks build a demolition chamber into every bridge!) Railroad tracks were blown up; one German invention was a small car which set demolition charges on the rails at intervals and from a distance detonated them — leaving one-foot gaps every 100 yards! Roads were full of holes; some roads, cut into the sides of mountains, had been blown down into the valleys. Many harbor quays had been destroyed, and ships were sunk in the harbors at strategic points.

Averaging 12 miles an hour in a jeep was excellent time for Sibley, and a periodic 200-mile round trip across Lesbos was more than a full day's work, from which it took several days to recover. The Greeks in each little village did almost nothing to repair even their own roads, because the government had not ordered it and had sent no money! Such complete bureaucracy so ties things down that there is no local initiative, and in the absence of explicit federal direction hardly anything gets done.

In the early distribution of the lumber sent in by the U.N.R.R.A. to repair essential buildings, the Greek Government required strict accounting for its disposition, and for some time every piece of lumber was weighed on a hand scale as it was unloaded! When this bottleneck was finally overcome, the government was all tied up in disputes over who should be in charge of rebuilding the villages and how much the lumber should cost, with inflation changing quotations daily. This, despite the fact that fully one-quarter of the Greek villages were thoroughly burned out.

Sibley visited the one remaining railroad shop in Greece. As he left, the manager asked if Sibley could possibly get him some

files — he was operating the only railroad repair in Greece and had but a single file in the whole shop! Greece's destruction is unusually thorough, Sibley said. The Germans systematically destroyed everything of military advantage, and the Italians destroyed wantonly; only the Bulgarians, who thought they were in Greece to stay, were tolerant and made efforts to rebuild the country.

The following members were present: H. E. Akerly '10, J. F. Ancona '03, Cecil Aronson '22, E. L. Baxter '26, A. H. Bond '15, R. G. Bowie '38, Geoffrey Broughton '36, Winton Brown '34, J. S. Bruce '39, H. F. Carver '32, A. E. Castle '40, H. E. Clements '32, H. R. Couch '20, G. L. Cox '30, C. K. Crofton '22, A. van C. Daburg '36, H. E. Essley '36, A. B. Fox '33, J. R. Green '46, A. F. Hamilton '35, A. S. Hamilton, Jr., '35, F. J. Hopkinson '20, E. C. Jewett '22, F. J. Kolb, Jr., '38, R. S. Leghorn '39, R. W. Peters '30, H. J. Samuels '41, H. McC. Shirey '22, Gregory Smith '30, D. MacM. Steward '33, G. R. Struck '34, D. E. Suter '38, R. G. Talpey '41, F. P. Thornton '36, Dwight Vandevate '22, R. G. Vyverberg '42, S. C. Wells '30, P. B. Wesson '98, and C. F. Wray '95. — FREDERICK J. KOLB, JR., '38, *Secretary*, Building 14, Kodak Park, Rochester 4, N.Y.

M.I.T. Club of Shanghai

The meeting on January 30 at 5:00 P.M. at the American Club was unusually small, only 18 being present. No tea was served, because the American Club catering staff had more than it could handle in preparing for their own monthly dance that same night. T. C. Hsi '15, President, as chairman, outlined the schedule of events that has been tentatively set up for the fiscal year. It is intended to be more varied than the run of tea-and-business meetings that took place in 1946, thus offering greater attraction for a large attendance. The first item of discussion was change of the name from Technology Club to M.I.T. Club. Excerpts of a letter requesting this change from Professor Locke '96, Alumni Secretary, were read. Opinions were largely in favor of the change. T. F. Wei '20 made a formal motion for the adoption of the "preferred standard" name, and it was seconded and passed without dissension. Beginning in February, this Club is to be known as an M.I.T. Club in line with other clubs all over the world.

A report was made by the Secretary-Treasurer on last year's finances, which showed a deficit of C. N. \$204,936. This was made up by contribution from J. D. Woo '38, Secretary and Treasurer for 1946. To cover the expenses this year, a scheme was proposed by the officers for all members to share expenses equally, according to the practice in 1946 with the exception that total collection of fees would be made at the beginning of the year instead of at each meeting. This proposal was not adopted. Instead, P. Y. Tang '23 moved that a nominal fee equivalent to \$5.00 in United States money be collected from each member and that the remaining expense be born by voluntary contributions. This motion was seconded and passed. Mr. Hsi then called upon the Assistant Secretary-Treasurer to report on identification badges and registration cards. A suitable semi-

permanent badge was under investigation. Registration cards were distributed among the members present and were being mailed to the others, so that a complete directory can be compiled on the basis of information received.

Two guests were present: F. S. Wang, director of the Peking Waterworks and member of the National Health Board; D. S. Abel, chief sanitary engineer of the United Nations Relief and Rehabilitation Administration, formerly a major in the Sanitary Corps of the United States Army and director of the department of health of the state of Alabama, U.S.A. Mr. Abel spoke on the general subject of "Bubonic Plague and Typhus Control." He illustrated his lecture with lantern slides showing the spread of these diseases by fleas and rats, and then their control. The meeting was adjourned at about seven o'clock. — **TEH-CHING LI** '37, *Secretary*, 181 Nanking Road, Shanghai, China.

M.I.T. Club of the Connecticut Valley

The Club met for dinner in the Town Hall Grill in Springfield on March 19 at 6:30 P.M. About 40 members and friends filled the Rathskellar Room in the Grill to capacity. The speaker was Theodore A. Wiel, professor of international relations at Springfield College. Professor Wiel was formerly with the American International College in Springfield for 14 years, during the last five of which he was dean. The subject on which he addressed us was the "Conflicting Interests of the Great Powers with the Nations in the Eastern Mediterranean Area," a most timely topic. The entire audience was given a new conception of world conditions as they actually exist and of the thinking of the people of the various countries involved in the eastern Mediterranean.

The next meeting of the Club, to be held on Wednesday, May 21, will be the annual meeting with election of officers for the new year. All members of the Alumni Association residing in the district are urged to ascertain from the Secretary the place and time of the meeting and are cordially invited to come and take part in electing the officers. We are hoping to have H. E. Lobdell '17, formerly Dean, now Vice-president of the Alumni Association, as our guest. After remarks by Vice-pres. Lobdell, motion pictures will be shown.

The Club desires to welcome 26 new Technology Alumni of the Class of 1946 who have moved into the Springfield area, and the officers of the Club invite these new members to become active and show their willingness to participate in the running of the Club by serving on a committee. Please make yourselves known at the meeting. — **MINOT R. EDWARDS** '22, *Secretary*, Holyoke Heater Corporation, 54 Waltham Avenue, Springfield 9, Mass.

M.I.T. Club of Western Pennsylvania

The third formal meeting of the 1946-1947 season was held at the University Club in Pittsburgh at 6:30 P.M. on March 24. It was attended by 27 members and three guests. After the usual informal period and an excellent buffet supper,

President Lafean '19 told the members that there was no new or old business to transact and recommended that the meeting immediately proceed with the showing of the pictures to be presented by the Aluminum Company of America. Introduced by Herbert H. Hall '14 of the Aluminum Company, the first picture, "Unfinished Rainbow," told the story of aluminum from its inception to present commercial production. The second picture covered the story of aluminum from mine to metal, giving in detail the technical process applied at each step. The final picture, "Date Line Tomorrow," reviewed the various finishes possible with aluminum and indicated how they are obtained. I. W. Wilson '11 of the Aluminum Company answered all questions presented from the floor about the production and processing of aluminum, its varied application and future prospects. The meeting was adjourned at 10:40 P.M.

Among those present were the following: E. M. Barnes '23, W. J. Bates '35, W. U. C. Baton '04, G. S. Brosky '45, G. I. Clark '41, E. J. Cole '44, W. M. Davidson '26, F. J. Fleischauer '42, M. M. Greer '26, H. H. Hall '14, A. J. Hoffmeister '46, M. C. Jansen '46, R. G. Lafean '19, G. A. Ley, Jr. '46, E. F. Losco '39, H. W. McKeague '34, G. A. Morrison '09, E. K. Owen '41, R. C. Rankin '23, P. W. Robinson '26, W. McC. Siebert '46, Thomas Spooner '09, E. D. Stevens, Jr. '32, J. L. Wandrisco '46, and I. W. Wilson '11. — **WILLIAM J. BATES** '35, *Secretary*, 141 Woodhaven Drive, Pittsburgh 16, Pa.

M.I.T. Club of Central New York

Twice in succession we have run afoul of the weather in calling our meetings. The second time was right after a record two-foot snowfall for the Syracuse area. Nevertheless, 10 Alumni and two guests waded through the snow to keep alive the spark of reunion. We convened at the University Club in Syracuse on March 4 for refreshments, a delicious roast-beef dinner, and an enlightening (and appropriate) talk about "Refrigerants and Refrigeration." W. A. Pennington, chief chemist and metallurgist of the Carrier Corporation, was our speaker, and he enlivened the evening with his humorous stories and technical discussion. Although we knew that Doc would give us the cold facts about refrigeration, he wouldn't promise much more than a little hot air.

The Carrier Corporation was well represented at this meeting, for the following M.I.T. graduates attended: John Middleton '29, Dan Shepherd '34, Earle MacLeod '38, Hilda Schneider Kressman '42, and Fred Hodgdon '42. Others present were: Gerald Fitzgerald '23, Alan Cummings '24, Fred Hungerford '24, Joe Owens, Jr. '40, Jack Schultz '42, and Ted Bartz of the Carrier Corporation.

Henry B. Kane '24 has been tentatively engaged for our next meeting, which we plan to hold on the first of May in Syracuse. This will be ladies' night as well, for we believe that they also will enjoy Mr. Kane's pictures and stories. More detailed information will be mailed to members. — **D. EARLE MACLEOD** '38, *Secretary*, 211 Columbia Avenue, Syracuse 7, N.Y.

M.I.T. Club of Central Florida

The Club held a dinner meeting at the University Club in Tampa on February 28 with 16 members present. We were glad to have with us A. B. Sherman '06 of Fitchburg, Mass., who is wintering in Sarasota, also Ken Upham, a prospective member of the Class of '52. Ken is the son of Bill Upham '23.

Our guest of honor was Professor Emeritus Arthur A. Blanchard '98, who delivered a most interesting talk on the various phases of the atomic bomb, giving what everyone present agreed was the best explanation of it yet heard, at least so it could be understood. Professor Blanchard is enjoying Florida's sunshine at near-by Lake Alfred, and the Club looks forward to having him as our guest again at a future date.

The following members were present: F. O. Adams '07, C. J. Belden '09, J. J. R. Bristow '14, J. W. Clary '96, L. P. Geer '15, C. L. Hall, Jr. '42, A. W. Higgins '01, L. N. Iredell '18, M. R. McKinley '19, C. G. Merrell '88, W. H. Mills '34, W. B. Newell '17, B. L. Skinner '42, W. B. Tibbetts '31, W. W. Upham '23, and J. A. Weaver '23. — **WILLIAM H. MILLS** '34, *Secretary*, Post Office Box 1050, St. Petersburg 1, Fla.

M.I.T. Women's Association

The Association held a tea in the Emma Rogers Room on Sunday, March 16, from three to six o'clock. The occasion was unusual in that the husbands and children of the members were especially invited to attend. Refreshments were in charge of Dorothy C. Fisher '46. — **ADELAIDE A. TOOMBS** '42, *Secretary*, 47 Alpine Street, Roxbury 19, Mass.

CLASS NOTES

1883

George R. Underwood died on March 12 at his home in Peabody, Mass., at the age of 84. He was graduated from the Boston Latin School in 1879 and from . . . Technology in 1883. He was for many years research chemist and purchasing agent for the American Glue Company. Long active in civic affairs, he was formerly chairman of the school committee, a member of the finance committee, the Peabody Institute library committee, and the municipal light board.

In addition to being vice-president of the Warren Five Cent Savings Bank in Peabody, Mr. Underwood was a member of the bank's investment committee and president of the Sutton Home for Aged Women. He was an instructor in chemistry at Technology for five years following his graduation and was a director of the American Chemical Society. — **HORACE B. GALE**, *Acting Secretary*, 10 Highland Street, Natick, Mass.

1885

Another member of our Class has passed away. Hammond Vinton Hayes, born in Madison, Wis., in 1861, died in Boston on March 22. He was graduated from Harvard University in 1883, after which he studied

at Technology and took graduate work at Harvard, where he received his master's and doctor's degrees. While a telephone engineer, he assisted in the development of telephony and the infrared signaling system and later, as a consulting engineer, spent much time evaluating telephone properties in the United States and England. As a result of this work, he published two books: *Public Utilities — Their Cost New and Depreciation*, and *Public Utilities — Their Fair Present Value and Return*.

In 1885, he joined the American Bell Telephone Company as head of the laboratory, being promoted later to the position of chief engineer. In 1915, he became associated with the Submarine Signal Corporation as consulting engineer and in 1924 was named president. While president of this corporation, he was instrumental in the development of the fathometer, a navigation instrument which registers the depth of the sea directly beneath a ship. He was also a leader in the development and improvement of devices for detecting the presence of submarines and instruments for transmitting underwater signals. Mr. Hayes once wrote me, "Since my resignation, I have equipped a laboratory on Summer Street in Boston and with one or more assistants have been trying to develop a new device similar in many respects to those upon which I have studied for more than 50 years." He was a fellow of the American Institute of Electrical Engineers and the American Academy of Arts and Sciences and a member of the Institute of Radio Engineers, the Acoustical Society of America, the Union Club of Boston, and the University Club of New York. — ARTHUR K. HUNT, *Secretary*, Longwood Towers, Brookline 46, Mass.

1888

On November 20, Edwin S. Webster, our Class President for 23 years, resigned as chairman of the board of directors of Stone and Webster, Inc. That organization is the lineal successor, without break, to the firm of Stone and Webster which Charles A. Stone '88 and he established in 1889. Jointly they were the active heads of the business until the death of Mr. Stone in 1941, since when Mr. Webster has carried on as chief executive. He has now relinquished the duties incumbent on the chairmanship, but will retain his Boston office and various directorships and be available from time to time for consultation and counsel. The board of directors, in a meeting held on December 18, unanimously passed the resolution testimonial to Mr. Webster hereinafter quoted and caused to be prepared a beautiful engrossed copy, signed by every director, which was presented to him on January 21 in Boston.

"The directors of Stone and Webster, Inc., desire to record in the minutes of this meeting the deep regret with which they have accepted the resignation of Mr. Edwin S. Webster as chairman of the board of the company which bears his name, and which he has so largely directed for more than half a century. From the first association of Mr. Charles A. Stone and Mr. Edwin S. Webster as students at . . . Technology, they found a community of ideas and a natural affinity which in 1889 expressed itself in the formation of a partnership known as Stone and Webster.

Their close and intimate association as friends and business associates continued until Mr. Stone's death. The small engineering firm which they had jointly conceived steadily grew in prestige, size, and influence to attain a reputation reaching far beyond the boundaries of the United States. Its extraordinary success in engineering, construction, management, and finance grew out of the high ideals and unusual ability of these two young engineers. They created with their hands, heads, and imagination an institution unique in American business. The corporation which succeeded the firm took over as its most valued asset the high reputation and sound traditions growing out of the 40 years' record of the firm of Stone and Webster. In World War I as a firm, in World War II as a corporation, the organization carried on work of immense importance to the nation.

"Since the death of Mr. Stone, Mr. Webster has continued with firm hand and wise counsel to take an active part in the direction of the company affairs. It is only because of his personal desire to be relieved of responsibility that the directors have accepted his resignation. At this time the directors record their appreciation and thanks to Mr. Webster for 57 years of service to his firm and company. He has been an inspiring leader; his sound sense and far-sighted judgment have served as a foundation rock during the trying days of depression and the no less dangerous days of extreme prosperity. The directors are happy to know that he will continue to occupy his accustomed office in Boston, and that they will have the benefit of his interest and wise judgment. They pledge to him their intention to carry on the business to the best of their ability in the high tradition and spirit for which it has been notable under his guidance."

In addition, Mr. Webster is a life member of the Corporation of M.I.T. and for nearly 30 years has been a member of the Executive Committee. He is also a member of the American Institute of Electrical Engineers and the Boston Society of Civil Engineers. He is a trustee of the Museum of Fine Arts and was formerly a trustee of the Massachusetts General Hospital. For 13 years he was president of the Massachusetts Horticultural Society and he still proves his active interest by regular entries in the flower shows. Of his recent exhibit the *Boston Herald* of March 11 had the following to say: "There were the sumptuous golden acacias, beloved by show-goers, which again won for the Stone Estate, Marion, a gold medal certificate. Edwin S. Webster, Boston's noted amateur, garnered a series of first prizes for his exotic orchids. Their color range was amazing — they were in salmon, green, red, pink, yellow, the familiar purple and even in pure white. He took prizes, as well, for his white and golden freesia." — BERTRAND R. T. COLLINS, *Secretary*, 291 Nassau Street, Princeton, N.J. SANFORD E. THOMPSON, *Assistant Secretary*, The Thompson and Lichtner Company, Inc., Park Square Building, Boston 15, Mass.

1889

The long and useful life of William Lincoln Smith came to an end on February 21 in the Stow Hospital near his home at Concord, Mass., where he had resided most

of his life. His lifelong work was that of a teacher and faculty member in the school which developed into the present imposing Northeastern University. A native of Concord, he seems to have been a product of Emerson's advice to his fellow townsmen "to manufacture schoolteachers and make them the best in the world." The affection of his students and associates was manifested at the time of his retirement from active work by a delightfully informal testimonial dinner at the Boston Chamber of Commerce on May 8, 1937, which it was the Secretary's privilege to attend. On this occasion it was alleged that he was born a full-fledged professor, and the poet laureate of the evening burst into song as follows: "For when he was born he astonished all/ With his handsome goatee/Grown magnificently!/He'd a weed in his mouth and a gleam in his eye,/A hat all awry —/ A four-in-hand tie,/And a miniature slide rule to multiply by." (With apologies to W. S. G.)

The Boston Sunday *Herald* of February 23 contained the following account of his life: ". . . Prof. William Lincoln Smith, retired head of the department of electrical engineering at Northeastern University, . . . died Friday at 79. A graduate of Boston Latin School and . . . Technology, he studied at the University of Paris for a year and returned to this country to teach in 1891. He was a pioneer in electrical illumination and first engaged in that field while teaching at Technology, before the turn of the century. In 1897, he joined the faculty of the co-operative school of engineering of the Boston Y.M.C.A., which later became the evening school of engineering of Northeastern College, now Northeastern University. He taught every course in the department before his retirement, in 1937. At that time, he was awarded an honorary degree of Doctor of Electrical Engineering. He was an associate trustee and a member of the electrical council of the Underwriters Laboratories of Chicago, former secretary of the National Association of Electrical Inspectors, and a member of various other professional organizations. He had been electrical consultant for the town of Concord since 1906. He was a member of Corinthian lodge, A. F. & A. M., and a former high priest and chaplain of Walden Royal Arch Chapter. He was a 32d degree Mason. He leaves two daughters, Mrs. Thomas Hollis and Mrs. Chandler W. Johnson of Concord, and four sons, Benjamin L., Farnum W., Philip L. and Donald Smith, all of Concord."

William Lewis is at 216 East Concord Avenue, Orlando, Fla., for the winter, enjoying a comfortable season and, he says, getting just the right amount of exercise afternoons at the Lawn Bowling Club with companions of the same age. — WALTER H. KILHAM, *Secretary*, 126 Newbury Street, Boston 16, Mass.

1891

Our 56th anniversary dinner was held at the Algonquin Club in Boston, on February 14. Fifteen were present, including our honorary member, Harry Clifford '86. Our other honorary member, Horace Ford, was unable to attend because of a previous engagement. Those attending were Brown, Clark, Cole, Damon, Dana, Douglass,

Earl, Fiske, Hatch, Holmes, Howard, Tappan, Wilder, and Young. Our President, Harry Bradlee, expected to be with us, but had a minor upset on that day and was forced to send his regrets. We missed him.

Regret cards were sent in from about 20 others, including a few of our regulars who are not in good health — Gifford Thompson, Morrill Ryder, Howard Forbes, and Tom Keene — also a number who would be with us except for distance. Arthur Pierce of Pittsfield says, "I shall probably ride my wheel and skate if the ice is in good condition." We had heard before of his exploits as a bicycle rider but did not know of his skating activities, which is "going some" for a youngster close to 80. Arthur Mansfield had hoped to come but was prevented by temporary trouble with his eyes. Edward Wait declined because of the recent death of his wife. As a group, we looked good for 10 or 20 years more, and seriously, it is surprising how little most of us change in later years. Perhaps this is because we see one another every year or so and forget how we looked when we were 60. Channing Brown is our best example of eternal youth, while our honorary member, Harry Clifford, easily qualifies as a contemporary, even though he was some years ahead of us at M.I.T.

Appropriately to the occasion, the Class received a valentine from our host, Harry Young. It read, "I just want to say, I'm glad we're friends, and I hope our friendship never ends." We were unanimous in accepting that sentiment, which with most of us is long standing — 60 years if we include our undergraduate days — and with some of us, goes back even farther. Harry reported for the Alumni Fund, stating that we were well over our allotment on both number of subscribers and total amount subscribed. We all agreed that the result showed that he had done a good job, and naturally the Class had backed him up properly. The Secretary reported five deaths during the year 1946, namely, Rose, Collins, Barnes, Dart, and Libbey. Notices and information on these have appeared in The Review. Our number with known addresses is thus reduced to about 85 and our active list to about 50. Of the active list, more than half are not available for class dinners because of distance or illness.

We had hoped to have Harry Bradlee tell us something of the atom bomb and possible future developments of atomic energy, but that will have to wait until next time. After the dinner, Frank Howard showed us some colored movies and stills which he took last summer in Colorado, around Denver and Colorado Springs, and in the Rockies, also some of the cliff dwellings in northern Arizona. Most of us know relatively little of Colorado, and Frank's pictures were both interesting and beautiful. We are thinking of having a dinner at The Country Club in Brookline this summer. How do you like the idea of a summer dinner, and will you come? Transportation will be provided.

Charlie Ricker is at a convalescent home in Evanston, Ill., not far from his son's home. Moseley of our Class also lives near by, and we asked him to call on Ricker and report back to us. This is his letter: "I found your letter on my return from 'the Loop' and went right up to see Ricker. He

is at the sanitarium, not very far from my house, and it has every appearance of being a very comfortable and well-operated place. It is in an excellent neighborhood and not far from his son's residence. I went to his room. He was not dressed for company but was 'up,' very wide-awake, and quite talkative. We had not seen each other since graduation, I feel sure, and I should not have known him. My name was not sent to him, and I was hoping that he would recognize me, but he didn't, although he remembered that there was a Moseley in his Class. It is possible that he will have the strength to write to you — I hope that will be soon. As for me, I have been going through a bit of 'not too well-ness' but am in quite good order again. I greatly wish that I could be with my old classmates on Friday. My very best wishes to all."

A letter from Ambrose Walker in Winter Park, Fla., tells of Steve Bowen: "I wish very much that you, too, were in Winter Park this year, for it has been a lovely season, but perhaps a little on the warm side, a record for many years. It is seldom that by this time we have not had a frost, but there has been none as yet. Winter Park is a lovely place not only as a setting but because it is full of interesting people and a very, very busy town. I went to see Stephen Bowen a few days ago. He still has a nurse but looks far better than when I first called. He is weak from his illness but quite lively, I am glad to say. Steve is at the Virginia Inn and seems very comfortably settled on the first floor. His trips to the so-called 'city' are by automobile, and I imagine help his morale. I do wish that his charming daughter could be with him, but she is very busy in good deeds."

A letter from Horace Brand in Chicago mentions his present activities: "My businesses are real estate, handling mostly family property, and coins, as you will see from the enclosed letterhead. Between the two, I am still very active. I, too, have grandchildren — one, who was in the Navy, as well as two sons who were in the armed forces, one in the Army and one in the Navy; also a son-in-law who was a lieutenant in the Navy."

Ed Smith in Providence writes frequently, and the following letter was in answer to our notice for the class dinner on February 14: "Somehow I have managed to mislay that card, notifying me of the '91 annual get-together. I should dearly like to be there with you all but cannot this time — perhaps it will be possible the next time. Not that I am utterly incapacitated. I do get to business with some degree of regularity, but between you and me and the stone post, I must be showing signs of approaching that state. The other day I picked up some gas at the station of a man with whom I trade frequently. He complimented me that, at my age, it is possible for me to get about so regularly. I asked him how old he thought I was, and he replied, 'Why, you must be over 80.' Well! Not quite that, but pretty close — a bit too close for real comfort when time is slipping away so fast. My best wishes to our Class for a 'bang-up' good time — an evening of fraternal enjoyment and reminiscences. Recently a letter appeared in the Providence Journal from a 'Vox Popper' who questioned the usefulness of education

in these days of frivolity, foolish movies, and the like. My answer is that education provides a bulwark against the disintegration of culture. Without culture, civilization would fall. Education defends our real achievements against such defeatists as he. Praise the Lord, our alma mater is providing an ever broadening education and contributing to a higher culture. I do not pretend to be a wonderful example of such attainment, but M.I.T. helped me toward that goal, and any cultural lack on my part is due to failure to recognize and profit by the opportunities presented. May M.I.T. continue to protect the world's civilization by graduating such noble classes as '91."

Charlie Hanington in Denver corresponds with several of our Class, and but for distance, he would be a regular attendant at our parties. He recently had a severe motor accident but is out and around again. The following is from a recent letter: "Distance prevents my joining you at the annual winter gathering, and I regret it exceedingly. Please give my best greetings to all. Frank Howard, as you know, was here this last summer, and I regretted that an automobile accident prevented me from entertaining him properly. On his way home he was kind enough to visit me in the hospital, an attention which certainly pleased me. I am on the job again here at the museum. My doctor advised me, on account of my eyesight and the fool drivers, to give up my car. This was a blow, but my kind friends and the museum boys transport me to and from my work. It is tough, after 46 years of driving a car to have to give it up. My very best to you and all the old-timers." — Bert Kimball put the following on his reply card: "Last week, while in Santa Barbara, I spent a very pleasant hour with Charlie Garrison. He seems well and enjoys having his brother with him."

A recent letter from Robert Ball in Cambridge, England, tells some of the difficulties in their living conditions over there. We hope that he can come to see us in the near future, and as he well knows, he would receive a hearty welcome from his classmates. He writes as follows: "Please accept my grateful thanks for the class notes, which form such an interesting link with old friends still on this side. Your plan is a model which might well be copied by English institutions, for there is no better one for keeping up *l'esprit de corps*. As you are doubtless aware, we are living under restrictions here to an extent as searching as during the period of hostilities but, since the necessity is realized, there is general compliance, and they are not really irksome unless you ask for something unreasonable, such as the renewal of certain household utensils. The replacement of a bald-headed brush, for instance, is not possible unless you accept a shaggy substitute. For the rest, there is a compensation in being old. Wants and necessities are few to those of our years, but the food rations bear heavily on the young, particularly on the undergraduate, who is on short commons such as we never experienced when clustering in the hall of Rogers Building. But notwithstanding all this, we manage to get a kick out of life. The garden, to a retired man, affords a pleasant, not to say profitable, occupation; and the fruit and vegetable sections yield enough for our wants. My daughter, son-in-law, and two

grandchildren fill up our house, and it is like putting the clock back for years to have children to play with.

"I do not remember Libbey. He is one of those with the longest period in one firm. Not many of us could belong to a 'twenty-five club.' In looking over our class lists, it strikes me as surprising how unpopular railroad engineering has been, though of course many occupations bear indirectly upon it. In the future, it will be atomic energy and the wonderful consequences that the use of it will bring to the engineer. It is a subject very much to the fore among Cambridge scientists, for I need not remind you of the discovery of the electron, the successful atom splitting, and work on isotopes done by eminent men within a mile of where these lines are written. But it remains for your great country with its resources to carry the work beyond the destructive stage to the birth of a new era, when cheap power will be at our service without being obliged to dig like moles to get the coal. This is a topical subject at present with a fuel shortage and roads blocked with snow! An eminent professor here who studies the break-up of hydrogen into helium in the sun thinks we ought to have atomic energy within five years. If so it will certainly be done on your side — and I believe it will. Your card of invitation to the dinner arrived today, the morning of the event. Too late for even the fastest plane! I hope you had a hearty gathering." — HENRY A. FISKE, *Secretary*, Grinnell Company, Inc., 260 West Exchange Street, Providence, R.I.

1892

Since turning in the notes for the April Review, the Secretary has received notices of the death of two more of our classmates.

Elmer G. Manahan died at his home, 35 Ridgeway Street, Mount Vernon, N.Y., on December 30. Born in Lawrence, Mass., he entered the Institute in 1888 and was graduated in Course XI, Sanitary Engineering, in 1892. During his active career since graduation, he had held the position of engineer for the Metropolitan Water Board of Boston and later was with the engineering departments of the cities of Pittsburgh and Cincinnati and the public works department of the City of New York. For many years he was associated with the New York firm of Fuller and McClintock as consulting engineer. He had retired from active practice some eight or ten years ago. He leaves a widow, Mrs. Grace Cutler Manahan, a son, Everett C. Manahan of Wilmington, Del., a brother, and a sister.

Walter P. White, who attended the Institute in Course V with the Class of 1892, died on February 7, 1946. Some years after leaving the Institute, he attended Cornell University, taking an A.B. and a Ph.D. degree in 1904. He had retired from active work some 15 years ago. — CHARLES E. FULLER, *Secretary*, Box 144, Wellesley 81, Mass.

1894

The absence of notes in the April number of *The Review* was not due to neglect, but because the Secretary was again away on a combined business and winter vacation trip to the Pacific Coast. Accompanied by his wife, he left Boston on January 11 and

spent the next five days in Cleveland, where he attended the annual conventions of the Refrigeration Research Foundation and the National Association of Refrigerated Warehouses. As chairman of the board of governors of the former, he presided at the sessions of the advisory scientific council and at the annual meeting of the foundation. This duty involved an address as chairman. Later he was elected for the fourth time as chairman of the board, an unpaid but interesting position in which he finds opportunity to assist in the planning and operation of the numerous research activities sponsored by this young but useful organization, which is supported by more than 100 nationally distributed companies in the cold-storage warehousing industry. While in Cleveland, the Prescotts had the pleasure of renewing old acquaintance and dining with Roger Rice '06 and his charming wife.

Leaving Chicago on the *California Limited* about midnight on January 18, and arriving at San Bernardino in the predawn of the 21st, they were picked up later in the morning and spent the next five days with friends living at Beaumont. Motor trips into the surrounding country, where the almond and peach trees were just coming into bloom, and over some of the fine mountain roads, and down into the desert to see Palm Springs, Indio, and the date farms and the Salton Sea, at 280 feet below sea level, were most enjoyable. Then came six days in what the reporters would call the great sprawling city of Los Angeles, followed by a joyous week with P. K. Bates '24 and family at Santa Monica. While in the Los Angeles district, the Secretary had many conferences and calls on or by friends and a few relatives, was guest at a meeting of the Metropolitan Club, a club of leading scientific and medical men, and visited one or two industrial plants. One day was given to a visit with Colonel and Mrs. Vestal at Pasadena. The Colonel, having been for five or six years the head of the Military Science Department at M.I.T. before his retirement from the Army, was an intimate of the Secretary. One evening was devoted to a dinner and meeting of the Technology Club of Los Angeles, at which the Secretary was the principal speaker. Here he was much gratified to meet several of his former students, among them C. S. Milliken '99 and Philip A. Herrick '24, and numerous others whom he had known. Another evening was given over to a meeting of the large local section of the Institute of Food Technologists.

Five delightful days were spent at the Price Ranch at Los Alamos, as guests of Mrs. Raymond Price. It is a great pleasure to speak of her hospitality and to report that she is carrying on most successfully since the death of our distinguished classmate, and will probably make it her principal home, with occasional visits to France. Through her great kindness the travelers were motored north to Berkeley, with opportunity for an overnight visit to Dr. and Mrs. John Sluder '41 at Salinas, where a visit was paid to the largest plant in the country for production of quick-frozen and chilled fresh vegetables. With Berkeley as headquarters, a stay of 12 days in the Bay region was made. One grand day was given to a '94 reunion of John Nowell, Austin Sperry, and Sam Prescott and their wives as luncheon guests of Nowell at the

Burlingame Country Club, followed by a visit to the magnificently located Nowell home in San Mateo, or more accurately, the edge of Hillsborough. For this excursion, as indeed for other entertainment and attentions, the grateful Prescotts were taken in hand by the Sperrys and were most hospitably treated. Mrs. Sperry was exceptionally kind to Mrs. Prescott, and Austin once more gave the Secretary the great pleasure of lunching with his special group of friends at the Bohemian Club, at which Arthur Fowle '93 is a regular member of the party. As in 1945 and again in 1946, it was an occasion of great pleasure to the Secretary. Another was the regular Technology luncheon in San Francisco, when 15 or more men were present, a considerable percentage of whom had been former students of the Secretary or otherwise associated.

Thus far, the period spent in California had been little work and much real vacation. The last few days included business, in the form of conferences with the research director of the Refrigeration Research Foundation, and a meeting of the northern California section of the Institute of Food Technologists, at which your Secretary was one of the speakers and especially did a little propagandizing for the national meeting which is to be held in Boston in June. Numerous attentions by Tech men and other friends at the University of California and at the Western Regional Laboratory of the United States Department of Agriculture added greatly to the enjoyment of the stay in the Bay region. Then came the departure for Seattle, where a dinner by the Technology Club of Puget Sound had been arranged for the Secretary, who spoke on the present situation at M.I.T. About 50 men attended, including numerous old friends. Your Secretary, at least, had a wonderful time. A day was devoted to a visit to the co-grandfather of the grandsons of the Secretary, followed by a visit to their uncle's family at the great naval base at Bremerton, and then the travelers hastened eastward on the new *Empire Builder*, which is the last word in streamlined train construction and cuts 10 hours from the old *Empire Builder's* running time to Chicago. Then home, after seven and a half weeks of absence.

The foregoing has been perhaps too self-centered in its news value. It had been hoped to bring to this issue personal news from other '94 men in California, and fruitless attempts were made to get in touch by telephone with W. L. Clark of Alameda, A. J. Farnsworth of Warner Springs, R. G. Hubby of Hollywood, W. L. Woollert of Los Angeles, and Frank Drake of San Francisco. Other Californians are F. M. Mann of Healdsburg, H. E. Johnson of Corona, and S. G. Cousins, who has made a recent change of address to 2106 H Street, Eureka. Other recent addresses received are those of Walter V. Brown, 135 East Amelia Avenue, Orlando, Fla., and Leon K. Davis, 700 Farmington Avenue, West Hartford 7, Conn.

In the November Review the Secretary reported that Mr. and Mrs. William H. King had announced the engagement of their daughter Patricia to Norman O. Mason, a Cornell man who had left college to enter military service and later returned to Cornell to complete his course in me-

chanical engineering. The wedding of these young people occurred in the latter part of December, and the happy pair are now living in Ithaca until his course is completed. For some unexplainable reason, the Secretary apparently did not acknowledge the wedding card or report the event in earlier class news — apologies to Billie and his wife. A recent letter from King gave anew the information. King reports himself as busier than ever and glad to be, a feeling that most of us old-timers can readily understand. As a tax expert, King's services are no doubt in great demand, and we hope he will continue to pursue his specialty advantageously for many years more.

Recently reported is the news of the death of Albert G. Zimmerman, who was a special student in Architecture, but associated with our Class during his years as a student at Technology. He had already had several years in practical work before coming for the advanced work in the department and was several years older than most students. Born at Peru, Ill., in 1866, he entered Technology in 1891, and spent two years there. For the next 10 years he was in general practice and traveled widely in this country in connection with his work. Meantime, in 1901, he became the architect for the newly formed National Biscuit Company and designed its bakeries in many of the large cities in the United States. He was the first to introduce fireproof construction in bakery plants, having built the first in Chicago in 1903. In addition to his position as architect for this large organization, he designed factories for the American Radiator Company, the Campbell Soup Company, and the Van Camp Packing Company. He retired in 1925, and lived in New York thereafter at 35 Fifth Avenue. He was a member of the Technology Club of New York, a life member of the Alumni Association and of architectural societies. His death at the age of 81 occurred on February 20 at the Alexian Brothers Hospital in Chicago. He was unmarried. Like many of the nongraduates of our day, his loyalty to the Institute and to the Class was unswerving, and we greatly regret the loss of this brilliant and useful classmate. — SAMUEL C. PRESCOTT '94, *Secretary*, Room 3-233, M.I.T., Cambridge 39, Mass.

1895

Finally, our old pal Judson Dickerman overcame his procrastination in letter writing and gave your Secretary a great surprise. Judson is "aging" with the rest of us but is still active and in good health, living at Charlottesville, Va. He is gallantly assuming the grave responsibilities of caring for a country place but is gradually appreciating the energy and time required to maintain it. His family is keeping him mentally alive, and between these two "chores" his time is fully occupied.

George G. Greene, II, has moved from Fort Lauderdale, Fla., to 159 Gratain Street, Hamilton, Ontario, Canada. Edward P. Hutchinson '95 (School of Mechanical Arts) has shifted from Brighton, Mass., to Box 111, Hampton, N.H. Anyone looking for Charley Wray in Rochester, N.Y., will find him at 255 Culver Road. Al Sloan has a new address in New York City, at Room 6333, 30 Rockefeller Plaza, New York 20, N.Y. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

By the time these notes appear in print, the annual gathering of the New York City classmates will be past history. Locke and Rockwell plan to attend from Boston, the latter stopping off on his way back from a trip which he will be making to Tennessee. There is also a good chance that both Damon and Henry may attend from Boston.

A recent letter from Wayne in Indianapolis told about an article entitled "Groping Inside the Atom," which Wayne sent to the Secretary. It looks like deep stuff, which the Secretary has not yet had time to read. Wayne also reported that Joe Stickney seemed to be improving in health and adding a little to his weight, although he still has a long, long way to go to catch up with Wayne. Stickney had been recently re-elected for his 16th term as president of the Indianapolis Athletic Club.

The Secretary was delighted to receive a call from Bradley Stoughton on March 3. Bradley was looking very fit and reported that, although now retired, he was busier than ever. He had completed writing the history of the American Institute of Mining and Metallurgical Engineers and was now busy writing a report of war work. He spoke on January 8 at a meeting of the Chicago section of the A.I.M.E., when he told of the impressions he had received regarding the German steel industry, based on knowledge gained as one of the members of a mission to that country.

The Secretary has had an interesting exchange of correspondence in lighter vein with Will Coolidge, who took the Secretary seriously (?) to task and berated him unmercifully (?) in writing for designating Coolidge so formally in class notes as "Doctor" Coolidge, in sharp contrast to the more familiar terms applied to many classmates such as Johnny Rockwell, Fred Damon, Jack Eynon, Perry Howard, and others. Both parties emerged from the encounter without serious wounds, and it was agreed to compromise the issue by using the appellation "Doc."

Bill Dorrance reports that retirement has finally caught up with him and he is no longer connected with the engineering department of the New York, New Haven and Hartford Railroad Company. Henceforth his address will be 103 Armory Street, New Haven, Conn.

Albert E. Smyser has moved from Pennsylvania to the land of his youth, and his address is now Box 505, Harwich Port, Mass. Belated information has been received of the death of Dr. Charles J. Smyser which occurred on July 22, 1943. He was one of the four Smyser members of our Class, but unlike the others, he did not stay with us. He took only the freshman year in Course V and then changed to Harvard Medical School to work for his degree of M.D. He settled in New Wilmington, Pa., where he served the community long and faithfully as physician and surgeon. He participated as assistant surgeon in the Spanish-American War, and was also chief of medical service at Debarkation Hospital No. 51 in World War I.

Lewis H. Tappan died in New Rochelle, N.Y., on March 9. In earlier years Lew had participated somewhat in class activities, but in recent years no one saw him and efforts made by some classmates to reactivate

his interest were futile. He was engaged in brokerage business in Boston and Providence but retired 15 years or more ago. He continued to live in West Newton until very recently, when he sold his house and moved to New Rochelle with Mrs. Tappan to live with their daughter. His health had been gradually failing for some time.

This seems to be a good opportunity for another one of Bob Flood's stories, as follows: "It was a freshman class dinner. I was to be toastmaster. Coddington and Norris, I think it was, stopped at my room to be sure I was going. All you had to do at Mrs. Burse's boardinghouse was to ask if somebody was in, and her niece would say, 'I think so. Go right up,' and she'd smirk. 'Come on in,' I yelled, 'just dressing, ready in a minute,' but I took my time. 'I think I ought to put on clean socks,' I said. 'Do you know how I tell if I need clean socks?' No, they didn't. 'Well,' I said, 'I throw them up against the wall, and if they stick, then I know I need clean socks.' With that I chucked them up just above a gas pipe that stuck out about an inch from the wall, and they hung. I learned that stunt from S. D. Flood '90, but I'd never done it before. The socks were black, and the gas pipe was black; so it didn't show. Those fellows' eyes just bulged out. They told the story that night and vouched for it. The best I could do was to hang a picture over that gas pipe in case there was any checking up. I couldn't have done it again if I had tried six months." — CHARLES E. LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge 39, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge 38, Mass.

1897

From the Newark, N.J., *Star-Ledger* we learn that Louis J. Richards, XI, for 49 years public health officer in Elizabeth, N.J., is planning to retire in May or June of this year to "take things easy." Graduated from the Institute as a sanitary engineer, he worked for about a year with the Boston metropolitan water board. He went to Elizabeth in 1898 to become the only paid worker in the health department. The department now has 50 employees. In 1912 he took a leading part in developing the Union County mosquito extermination commission, serving as secretary for several years and later as consulting engineer. At one time he was president of the New Jersey Public Health and Sanitary Association.

William Edgar Reed, VI, who has been a consulting electrical engineer in Pittsburgh, Pa., since 1904, died in that city on January 25. After his graduation he was chief engineer of the Westinghouse Company in Paris for five years. He was a past president of the American Institute of Electrical Engineers. He is survived by his wife, one son, and two daughters.

By the time that this issue of The Review comes to your notice, you will probably have received detailed announcements of the 50th anniversary reunion. Plans as outlined at the time of this writing call for an outing at East Bay Lodge, Osterville, Mass., from Tuesday, June 10, until Thursday, June 12. Graduation Day at the Institute will be Friday, June 13; and Alumni Day, with the Banquet, will be Saturday, June 14. Let us have a large attendance at all these events.

Sumner Gowen, Course I, died on February 18 at his home in Phoenixville, Pa., in his 74th year. He was a native of Wakefield, Mass., but had lived in Phoenixville since his graduation, being associated with the Phoenix Bridge Company up to the time of his death. He leaves a widow. Burial was in Phoenixville. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

1898

We have been asked about the 50th and the ladies. What are the plans for the wives, the sisters, and the daughters? In addition to the day at the Country Club and at Babson Park, here are some suggestions. The writer has lately passed through a national convention, held in Boston, in which there were special events for the ladies. A special portfolio for ladies described these in detail. It contained 10 articles, including a map of Boston, a booklet describing fascinating trips in and about Boston, three trips in detail prepared by experts for G.I.'s — viz., trip through the heart of Old Boston, trip on Beacon Hill, and trip through Old Cambridge and Harvard — a list of shops in Back Bay, Beacon Hill, and downtown areas, and finally a detailed list of special events including some of the above mentioned trips and many others that could be selected, such as a bus trip to Lexington and Concord, a combined trip to the Boston Museum of Fine Arts and the Isabella Stewart Gardner Museum, and a trip to Technology. Doubtless, many of the ladies may never have visited Boston, and it is a safe bet that a large proportion of the '98 boys and girls have never seen the new M.I.T. The Institute that we attended and that is dear to us could be dropped inside the present extensive institution, and you would have to hunt to find it; but the old spirit continues.

Last month we were motoring with the Godbalds across New Mexico and over mountain passes in Colorado, reaching Ouray, Colo. We continue: "The next morning we kept north, passing through a gap in the mountains, and on to Montrose and Grand Junction, Colo., gradually swinging west and over into Utah, making for Price, which we reached without incident in time to get lodging at a very nice tourist court, with 265 miles to our credit for the day. In this Mormon town we had our meals in a Greek restaurant.

"From Price to Salt Lake City, the road passes through canyons and over moderately high mountains, and the scenery is very wonderful. The railroad and highway competed for the choice locations through the canyons, but since the railroad always won out, we were always looking down at the tracks. From Salt Lake City we traveled across the salt desert to Wendover and then on to Wells, Nev. The vast expanse of the white salt is something worth seeing, and when the sun is shining, one needs dark glasses on. We made 298 miles that day.

"Across the state of Nevada on U.S. 40 lies a wide expanse of range land, and the miles are reeled off fast. The country seemed more fertile this year than I had seen it before, when it had all the aspects of the desert. The route in many places followed that of the pioneers in their covered wagons, but oh, at what a different speed!

We stopped at Fernley, Nev., after a day of 303 miles. Fernley is a very small village, a short drive east of Reno. We stayed at the eight-room hotel and went to bed hungry after eating at a little two-by-four café.

"The next morning, Sunday, we drove to Reno but were so early the only place we found open for breakfast was a diner. But as breakfast is an easy meal in any case, we promptly consumed the bacon and eggs and were on our way. The scenery this day was very wonderful, following the Truckee River into the Sierras, then past Donner Lake, and up over the Donner Pass, all named after the ill-fated Donner party that was overtaken by snow before getting through the pass. The pass is at an elevation of 7,100 feet and the road from Truckee to the summit rises only about 2,000 feet, but in a very few miles, this being the eastern slope. The western slope, however, goes down nearly to sea level and is one long, downhill drive for about 100 miles. This road over the high Sierras is the only route east and west that is kept open through the winter, and at times the snow gets the best of it and closes the road for perhaps a day. It is in this neighborhood that the railroad has so many snowsheds. We had an easy day, mostly downhill, passed through Sacramento, over the Sacramento River, and down to Vacaville, where we knew of an exceptionally nice tourist court, and made 230 miles for the day.

Vacaville is about 30 miles from Vallejo, a familiar town to me; and the next morning we drove there for a real breakfast at the small hotel we were acquainted with. After breakfast we took the road around the northern tip of San Francisco Bay to San Rafael. We wanted to go up Mount Tamalpais, which 40 years ago, the last time I was up, was a wonderful excursion trip from San Francisco. At that time the ferry took one to Sausalito, and a train from there to Mill Valley, where we changed to the mountain railroad, which wound up in crooked bowknots and double bowknots to the summit, and there you had it — a view unequalled, showing the ocean, the bay and surrounding cities, and the mountains beyond. The railroad has since been torn up, but we were able to drive up the highway that has taken its place. The scenery is all there, but very different from 40 years ago, though still wonderful. After feasting our eyes and filling our lungs with fresh air, we started down, struck the main highway, and soon crossed the Golden Gate Bridge, keeping south through the western fringe of San Francisco, and on down the coast to Santa Cruz, where we stopped for the night, the day's run being 191 miles.

"The next day we continued down the coast through Monterey, and on down the scenic Coast Highway, with the Pacific in view all day. We stopped at San Luis Obispo, a convenient halfway stopping point, after making 185 miles for the day. The next day, 212 miles took us home to San Fernando, after passing through Santa Barbara and along more of the Coast Highway. And thus ended our 17th Transcontinental Flight, nine west and eight east." Congratulations, Charles, and thanks for the travelogue. On your next continental trip, how about coming to a place named Boston, where there are famous inns and clubs, and also, across the river, a famous

Institute, that delights to honor especially the 50-Year Class.

Our Secretary Emeritus, Arthur Blanchard, writes a kaleidoscopic letter from Lake Alfred, Fla., dated March 7 and reading as follows: "You have been doing a wonderful job with the class notes. I have been meaning to write you ever since reaching here, but I am now getting to it only when we shall be leaving here in less than a week. We shall come home by slow stages and not arrive before the middle of April. We left home early in November, leaving our house in Brookline occupied by our son Malcolm (M.I.T. '36), his wife, and two children. Malcolm was a captain in the Transportation Corps of the Army. After getting his discharge in March, 1946, he worked about six months in California, when his job petered out. He came East and has found work in the construction business in Greater Boston. Our other son, Joseph, was a captain in the Medical Department and saw active service in the Battle of the Bulge and the Rhine Crossing and the Ruhr. He was discharged in May, 1946, and is now an interne at Bellevue Hospital, New York City. He has a wife and one child.

"We stopped for two days with our daughter, Shirley, who is married to a doctor in Scarsdale, N.Y. Our next stop was with my cousin, Joseph C. Jefferds, in Charleston, W.Va. His son, Joseph C. Jefferds, Jr., '40 lives near by, and his son Joseph C. Jefferds, 3d, is a promising youngster. Our classmate, William Brewster, is road commissioner of West Virginia and has his office in the Capitol Building in Charleston. Joe, who knows him well, called him up but found that he was in Birmingham, Ala. We can testify to the excellent roads which he has established over the mountains and through the valleys of West Virginia.

"Soon after our arrival here at Lake Alfred, George Cottle telephoned from Miami to see whether we could put him up here for four days. We could, and we had a delightful visit, inspecting the citrus-processing plants, the citrus experiment station of the University of Florida, and Roger Babson. Roger has a beautiful home near Lake Wales in Mountain Lake Park, on the slope part way down from the Bok Tower to the lake. The news commentators have rather ridiculed Roger's plan to move the Babson Institute and its valuable records to central Kansas to be safe from atom bombs. But Roger must have this idea in the front of his mind, for he broached it to us almost at once, and we found it a most sensible scheme. He would establish a branch institute in Kansas which would function usefully anyway but in time of crisis could carry the whole load. In general, his idea was to spread activities — his own, those of M.I.T., and the government offices as well as industries — as the best defense against atomic warfare. Roger still writes his weekly syndicated article of good advice, financial and moral, which appears in the papers of every hamlet and city in the south, southwest, northwest, and central states that I have visited. I have cut several from the Sunday issues of the *Tampa Tribune* and am enclosing them.

"A few weeks later Roger held his annual midwinter business conference in

the auditorium of Webber College, Babson Park, Florida. It was similar to the summer conferences held at Babson Park, Wellesley Hills, Mass. He had attracted most able speakers on business and finance, the citrus industry, and world affairs; and a particularly sound address was given by Captain W. D. Puleston of the Navy on "What about World War III?" I enclose a program of the meeting. Several of the men from this hotel went with me to this conference, and all agreed that it was a whole day well spent. Incidentally, a delicious buffet lunch was served free to all comers and presided over by the staff and charming students of Webber College. The people at this hotel are mostly religious people, and every Sunday evening a song service with a speaker on an appropriate topic is held in the big hotel lobby. I talked one Sunday on "Science and Religion," and on a week-day evening I discussed the atomic bomb.

Charley Locke '96, with his usual efficiency, notified the officers of the Technology Club of Central Florida of my presence here and probably suggested that I be asked to one of their meetings. So on February 28, Mrs. Blanchard and I drove the 50 miles to Tampa. Some of the ladies took charge of Mrs. Blanchard, for Florida is not progressive like Boston in including ladies at its alumni gatherings. It was a most friendly group there. About half were businessmen active in the management of the industries of this progressive state, and half were oldsters like me, relaxing and prolonging their years. Of particular interest was Joseph W. Clary of Charley Locke's Class of '96 and Course XIII. He had long been associated with our classmate Godbold in the ship designing department of the Navy in Washington, D.C., and he spoke with affection and admiration of Godbold. I told the crowd a little about Technology during the war and at present during reconversion and then, at the request of President Higgins '01, of the club, a little about the atomic bomb.

"George Cottle went to Mount Dora, about 100 miles from here, to visit another friend, and then he was to return to Miami, which was his headquarters for a trip by air to Yucatan, where he was to visit the Mayan ruins, which Lester Gardner once so vividly described in one of his circular letters on his pioneering air excursions. I myself plan to reach home about the middle of April and hope to be in time for the local gathering of '98 men that you forecast in your March class notes." Thanks for the letter, Arthur, and welcome home. The clippings and material about Roger Babson, enclosed with Arthur's letter, are numerous, diversified, and extremely interesting. They will be featured in later class notes.

Ponce de León traveled all over the lower basin of the Mississippi, searching for the Fountain of Youth. What the doughty Spaniard failed to find, George Anthony has discovered. Listen to this: "Here I've lived 71 years, and today I get the thrill of my life seeing a whole paragraph in print devoted to me. My ego, blood pressure, and temperature all went shooting up, and now I know the answer to the question as to what will prolong my life indefinitely — a trip to Boston, a visit or telephone conversation with you,

and then getting my name in the public print — The Review. I enjoyed my quick trip to Boston and then to Maine in early December. I always love to get back East, and then I can't get a train back West quickly enough. Bizarre disposition for a purebred Yankee, isn't it? We've been sweating it out here in the Midwest, cursing the weather and patiently awaiting the arrival of spring, for, in mid-May, we load our duffle and us four dogs (me and the three setters) and hie us north to a wonderful place among the lakes and forests and rivers of the north country. Up there I can tell the cockeyed world a few of the fancy words I've accumulated over the years and cuss over the many errors and sins of a long life, at the same time offering up a silent prayer of gratitude for the few sensible and worth-while things I have accomplished. It's wonderful what a great fellow one can be in the calm surroundings of the silent and peaceful forest, and how one can get the plusses and minusses to form into a supersaturated solution of life's balances, and to precipitate into contentment and satisfaction. Well, I seem to be wandering in a field outside my natural element and so am in danger of trying to rub the philosopher's stone. Forgive me for my iniquity. I had a birthday on February 22 and naturally am feeling rather aged, although I am still pretty tough. Anyway, George Washington and I had ourselves quite a time. Well, Ed, I'm sorry I've inflicted myself upon you. Try to bear up under it. I was simply in the mood."

Thanks, Tony, for the letter and the pearls of wisdom and philosophy. We can stand any quantity of that philosophy and like it. And boys and girls of '98, especially those of you who have not yet figured in the class notes, read the first paragraph of Tony's letter and drink freely of the Fountain of Youth. — EDWARD S. CHAPIN, *Secretary*, 463 Commercial Street, Boston 13, Mass.

1899

William C. Phalen, V, for many years a geologist with a large chemical corporation in Syracuse, N.Y., now has an opportunity to study zoology at close range, since he moved last fall to Washington, D.C., and is now located at 1717 Lanier Place, Northwest, which overlooks the Zoo in Rock Creek Park. He is still keeping up his geological work, he tells me, by a sort of remote control, I take it. Will's son, formerly located in Albany as assistant vice-president of the New York Telephone Company, is now a vice-president of the same company in New York City. Will, who recently attended the 75th anniversary meeting of the American Institute of Mining and Metallurgical Engineers in New York City, is writing a chapter on "Salt" for the forthcoming revision of *Industrial Minerals and Rocks*.

From present indications, most of the Class will have retired by the time we reach our 50th anniversary of graduation in 1949. The latest information along this line comes from James B. Ellery, V. For many years, Jim was a chemist in a large steel mill in Pennsylvania; he then resigned to return to his home in Annisquam, Mass., and care for his father's property. More recently he has been connected with

the Davis Brothers Fisheries Company, in Gloucester.

Jim indicates that he expects to be at Technology on Alumni Day, which is to be observed on June 14. Better note this date on your calendar of events now and plan ahead to be there. In the near future you will hear more about the plans for our 50th reunion in 1949. — BURT R. RICKARDS, *Secretary*, 381 State Street, Albany, N.Y. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston 9, Mass.

1900

Dick Wastcoat let go of his nurse's hand long enough to write in as follows: "On receiving the February issue of The Review, I find I am still in bed, according to your report. To bring you up to date — my schedule is to be up and dressed, bathed and shaved by 10:30 A.M.; retire by 7:30 to 8:00 P.M.; and listen to radio or read until 10:00 P.M. I still have three beautiful nurses to hold my hand and watch over me. I am allowed company and attend to some business from the house. Heart now coming along fine and steady. Not allowed downstairs yet. Hope to be out in a couple of months so that I can put in a few hours at shop. Donated 35 pounds to fat drive. You ought to see my shape now. Come and see me. Certainly, it was wonderful for you and Ed Bugbee to drive down and see me. If you don't come down again, I shall be peeved."

A recent letter from Osgood in Florida reads thus: "I am entering Johns Hopkins next week for examination and any improvements considered desirable. The first operation was quite extensive, and there are a few odds and ends which need attention — x-ray probably. The first cold spell of the winter occurred last night, when the temperature dropped to 34 here at the house. Our fireplaces and heaters are at work, but the weather seems to be moderating considerably. I will write Dick Wastcoat shortly, by which time I may have some pictures. We rented the whole house this year, and have therefore moved into the six-room Palm Avenue house on the rear of the premises. I enclose a snapshot of the small house and a poor picture of the large place. I hope you have everything under control, and that we both may have our usual health restored when next we meet. Elbert Allen and his wife called. They are over at Bradenton." And later, from the hospital in Baltimore, he writes: "Best wishes to everybody. I am still hanging on, having returned here for x-ray and encouragement. I may be back in the South in a week, and then next summer I might have a month or so in the North."

Bugbee sent in the following note: Arthur C. Melcher, V, for many years manager of the Division of Laboratory Supplies at the Institute, retired at the end of last year. He is looking forward to a full-time gardening job at his Newton Center home. Bugbee also said that he had recently received a letter from Stanley Sears, III, which was in lieu of a Christmas card, as Mrs. Sears had died during the year. Stanley is valuation engineer in the Income Tax Unit, Treasury Department, Washington, D.C.

Those of the Class who attended the midwinter meeting of the Alumni Association on television were Fitch, Newhall,

Silverman, Richardson, and Neall. Bill Hart attended the November meeting of the M.I.T. Club of the Province of Quebec in Montreal. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston 9, Mass.

1901

On the class records sheet attached to the recent class letter, Alberto González, III, reports that his present occupations are as follows: (a) engineer with the *Compañía Mexicana de Gas, S.A.*; (b) professor of surveying and geodesy in the *Universidad de Nuevo León*; and (c) occasional engineering and mining work with other companies or private individuals; (a) and (b) are my steady work, having been 13 years with the former and four years with the University. I like both jobs. I am in good health and enjoy life and my work. I have a healthy family: my wife and eight children — four boys and four girls, all with good jobs. I must be getting old even if I do not feel it because I have also five grandchildren — three boys and two girls. I am a member of the following: *Sociedad de Ingenieros y Técnicos de Monterrey*; *Sociedad de Matematicos de Nuevo León*; *Circulo Mercantil Mutualista de Monterrey* and *National Geographic Society of Washington, D.C.* On the no-address names I see Salvador S. Madero. His address is *Hacienda del Rosario, Parras, Coahuila, Mexico*. Alberto's address is the same that it has been for some time, *Edificio La Nacional, Apartado 416, Monterrey, N.L., Mexico*.

Roger Wight writes: "I retired from active business on February 28. My plans for the future are quite unsettled, it being my present preference to loaf rather than to do much of anything. In a month or so, however, I shall probably get tired of loafing and in due course may be writing you of taking up something to keep me out of mischief. I shall probably sell my house in Cape Elizabeth, Maine, and may move to either Massachusetts or Connecticut, and it is not beyond the realms of possibility that I may arrange for a regular trip to Florida each winter."

Henry Chambers writes from the Clearwater Beach Hotel, Clearwater, Fla.: "We drove down here from Litchfield — 1,362 miles on 120 gallons of Skychief and two quarts of cylinder oil. There was snow, mist, fog, and rain until we reached this sunshine state; and although the latter part of January was grand, February to date has been cold and rainy, with the total rainfall this month 3.70, which is 1.57 in excess of the normal. However, when we read of the kind of weather that is being visited upon you New Yorkers, we are quite content to settle for a snappy temperature in the low 60's, without snow, ice, and sleet. There have been no changes in my address, wife or children, save that our son and my namesake took unto himself a dear wife on the 15th of last June (Mrs. Elizabeth Sweetser Foster, whose first husband was killed during the early days of the African campaign)."

Bob Williams is still active as engineer with the Submarine Signal Company. He says, "Although the war is over, we are still working for the Navy on new submarine apparatus. We are also working on radar in addition to our commercial ap-

paratus, including the fathometer." — I note in *The Review* that Al Higgins and Ralph Robinson are serving on the Alumni Association's national nominating committee for officers and representatives to be voted upon this spring. — Donald Kohr, President of the Lowe Brothers Company, manufacturers of paint, varnish and lacquer in Dayton, Ohio, reports as follows: "There is no news except that I shall be 70 next month, and up to the present time, so far as I know, my business associates do not act as though they thought I were beginning to slip." — Anthony Peters finished with the Army Engineers (Boston) in September and says, "I have decided to retire. It's nothing new — just looking forward to some fishing this spring and to spending most of the summer in Maine." — Warren Bickford is merely "loafing" — during the winter in the Schenley Apartments, Pittsburgh, Pa., and during the summer (from early spring until late fall) at Centerville, Cape Cod, Mass. (Telephone: Hyannis 1169 M).

Nat Patch is secretary and advertising manager of the Lumen Bearing Company in Buffalo. He writes as follows: "I am mostly confined to taking it easy because of heart trouble and nearly complete loss of ability to see enough to read. I keep going, however, and maintain my contacts and hope to do so for many years to come. I am very sorry that I was unable to attend the class reunion last year, but my health, unless it improves, will not permit traveling. I therefore feel doubtful as to whether I shall ever be able to attend further meetings. I think of all the boys as they convene and sincerely trust that many of them will continue to enjoy good health, enough to be able to have a happy reunion."

Al Higgins is still going strong as president of the Florida Power Corporation, St. Petersburg, Fla., and vice-president of the Georgia Power and Light Company. In addition, he has recently become president of the M.I.T. Club of Central Florida. He writes: "I do not know that I have any particular notes about myself, except that you will note that recently I have assumed the presidency of the M.I.T. Club of Central Florida and am trying to revive Alumni interest in Technology affairs in this section of the country. It has been mighty pleasant to have Ed Seaver wintering in the nearby city of Clearwater for the last few years, and I have seen him two or three times already this year. I am teaching him how Florida crackers play bridge. They surely know how to take the Yankees in camp. I have recently had a letter from Roger Wight, stating that he anticipates taking things easy before long, and so I am trying to sell him on the idea of wintering in Florida, in order that he may enjoy worldly things for 10 more years than his normal expectancy. I was glad to get your note recently and see that Albert Casani is supposed to be living here. I wrote him yesterday, telling him I should be glad to take him over to the alumni meeting in Tampa. There has not as yet been time to receive a reply. I never was so busy in all my life nor had so many different problems to contend with. I find almost all businessmen confronted with the same conditions. I am getting quite a kick out of a freshman from St. Petersburg

whom I am assisting financially to attend M.I.T. this year."

I report with regret the deaths of two classmates: Francis H. Pough on September 20, and Harold B. Wood on February 12. We have no further information about Francis Pough, at present, except that he had resided for some time at 4 Lenox Place, St. Louis 8, Mo. We have received the following note from Mrs. Annabelle P. Wood: "Enclosed find my sad news. Mr. Wood, we thought, was in perfect health. We were to have started on a long motor trip last week. As you will read in the article, he was playing top golf last fall." The article is from the *Arlington, Mass., Advocate*, of which Harold Wood was publisher and owner, and reads as follows: "A host of friends, business associates, town officials, and relatives filled the First Baptist Church . . . to honor Harold Blake Wood, who passed away early [on February 12], and to comfort his stricken family. . . . As were his fathers for seven generations before him, Mr. Wood was a native of this town and spent the larger portion of his very active life here. Since 1928, on the death of his father-in-law, Charles S. Parker, who had been editor and publisher of the *Arlington Advocate* for more than fifty years, he has owned and published the paper and been active in the civic and social affairs of the town."

"Since his young boyhood, Mr. Wood has enjoyed an enviable reputation as an athlete, first as a baseball and football player and later as a ranking golfer. Although he was just one month short of sixty-eight years of age at the time of his passing, he was still at the height of his mental and physical powers. In fact, it was only last fall that he won the veteran golfer championship of the Winchester Country Club and turned in some sterling rounds of sub-eighty golf in doing so. In last week's issue of the *Advocate*, the same issue which announced the passing of the publisher, it was also noted that Mr. Wood had been high man in a duplicate contract bridge tournament the preceding Friday."

"Son of William Ellis and Susan Freeman Wood, Harold Blake Wood was born in Arlington on March 14, 1879. He and the young lady, Annabelle Parker, who was to become his wife with a future of lifelong love, attended the same class of the Russell School and were graduated from Arlington High School with the class of 1898. They were married in the Orthodox Congregational Church five years later. Mr. Wood studied mechanical and electrical engineering at . . . Technology with the class of 1901 and after his schooling spent a short time with Stone & Webster in Boston before associating himself with the family business, William T. Wood & Co., which at that time, as for many years before, manufactured ice tools and ice handling equipment in this town. In 1905, the Arlington company merged with Gifford Bros. of Hudson, New York, and Mr. Wood moved there with his family. During his thirteen years in Hudson, Mr. Wood became general manager of the Gifford-Wood Company, but there was apparently always a strong longing to return to his native town. In 1918 he had the opportunity to do so when he took over the management of the Boston office

for the company. Foreseeing the decline of the natural ice business, he accepted the management of the New York office of the Jeffrey Manufacturing Company, and from 1921 until 1924 the family lived in Montclair, New Jersey. Mr. and Mrs. Wood spent the next four years traveling while their boys were in college and returned to Arlington to stay when Mr. Wood purchased the Advocate from the Parker estate.

"In Arlington High School and M.I.T., Mr. Wood organized and captained football and baseball teams. While he excelled in both, it was as a pitcher that he earned his early athletic fame. He and his brother Ellis, who was his catcher all through high school, made a battery which was famous in this section of the country. In fact, brother Ellis, who was a year older, took a post graduate course in high school so that he might catch for his brother for another year. He never lost his interest in sports of all descriptions nor his active participation in the game of golf. He was twelve times champion of the Hudson River Valley Golf Association and was three times champion of the Winchester. He also had a local reputation in contract bridge circles and was a fine bowler and chess player. He had other hobbies on the intellectual plane and used to give public lectures on a variety of subjects. He was also an accomplished musician, having been organist in the Presbyterian Church in Hudson, New York, for thirteen years and before that in the First Baptist Church of this town, where he substituted for his father, who was regular organist of the church for more than fifty years.

"Besides his wife, Mr. Wood is survived by two sons, W. Parker and Leonard D. Wood; four brothers, J. Freeman, W. Thoring, Ellis G., and Oliver W. Wood; two sisters, Mrs. James Nowell and Mrs. Dunbar Carpenter, and four grandchildren. He was a member of the Massachusetts and American Press Associations, the Arlington Chamber of Commerce, the Arlington Rotary Club, Arlington Friends of the Drama, the Arlington Philharmonic Society, several men's clubs of the town and the Winchester Country Club." — GUY C. PETERSON, *Secretary*, 788 Riverside Drive, New York 32, N.Y. THEODORE H. TAFT, *Assistant Secretary*, Room 3-266, M.I.T., Cambridge 39, Mass.

1902

As a result of the postal cards sent out announcing the reunion at East Bay Lodge, Osterville, on June 12 and 13, several items of interest have been relayed. Luke Collier writes that he has been retired from the United Shoe Machinery Corporation since last May and will be at the reunion. Les Millar informs us that his connection with the War Shipping Administration ended with 1946 and that he is now back in New York after about a year in Boston.

In a letter written the first of February to Dan Patch from Carmel, Calif., Lydia Weld tells of her accident: "On October 1, I climbed a ladder to put a new bulb in the light at the corner of the house. I unscrewed the bulb — that is all I remember. The ladder must have slipped against the vines; anyway, I went off backwards, hitting the back of my head on the stepping stones in the lawn. I knocked myself out

and into the hospital for two weeks and still can't do anything. But I am really better. The dizzy spells are letting up. The doctor thinks I broke a blood vessel, which takes time to clear up. I did enjoy hearing the World Series in peace and quiet in the hospital for the first time in 10 years." She still hopes that she may get East this June.

Brainerd fears that he cannot stand the strain of attending the reunion but asks that the Class be reminded that he lives at 148 Broad Street, Middletown, Conn., and that he will have open house for such of the Class as may be passing through the town on their way to Osterville and would like to have them call in for refreshments. Please let the Secretary know if you expect to call so that he will be at home.

Miss Beckler, who for many years served as the head of the diagnostic laboratory of the Massachusetts state department of public health, retired last September. The February news-letter of the department pays tribute to her excellent service, stating that she came to the department as their first full-time diagnostic bacteriologist in October, 1914, and continues, "Miss Beckler, in her 32 years as head of the laboratory, built soundly, overlooking no detail which would give the physicians of Massachusetts their reports as promptly as consistent with accuracy."

If anyone has decided unexpectedly to come to the reunion, let me know, and it will probably be possible to give you "bed and board." — BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston 16, Mass.

1903

Your Secretaries did not know until the first of February of the death of Chester Aldrich. We regret exceedingly that we had received no word before. Chet was the long-suffering and faithful secretary of the Class for many years, up to 1928. He carried on the work of the Class, wrote up these notes, called meetings, and so on, with the help of Gleason and others, in addition to his regular work. For many years he was treasurer of the Gray-Aldrich Marine Corporation, dealing in marine engines in Boston, and only sold out his interest to the J. H. Westerbeke Corporation as of January 1, 1945. Soon after that he wrote us as follows: "I have been in the marine engine business, running my own company, since 1905. We have carried on comfortably though not happily during this war; having lost our young men to the armed services put more of a burden on me and, as you know, we '03 men are at a time of life when work should be lessened rather than increased. So when I had a favorable opportunity to sell out the business, I decided that 40 years on one job was enough and that it was time to graduate. I am serving the new firm for a few years in an advisory capacity, as vice-president." But in talking with us he stated that he was working harder than ever. On November 2, he went home from his office and, while preparing to go out for the evening, was stricken with a cerebral hemorrhage and died that night. He was a dependable attendant at all reunions of the Class, and we shall miss him.

On January 16, Ernest W. Pelton, II, died in New Britain, Conn. After more

than 41 years of service with the Stanley Works, in which time he was successively cost accountant, superintendent of all tool and machine departments, general superintendent, and vice-president, he retired in March, 1945. He was widely known as an industrialist and as a civic leader in New Britain, where he served on several municipal and charitable boards and was a director of the Berritt Savings Bank. He leaves his wife and two sons.

Gould, Denham, and Cushman represented the Class at the midwinter meeting of the Alumni Association on February 8. Eustis has been in Cuba for a part of the winter, and Gleason is "trying to outlast the winter weather" in Louisiana. Lowell Thomas paid a tribute of admiration over the radio to J. Howard Pew, II, who is retiring from the presidency of the Sun Oil Company after long and brilliant service. — FREDERICK A. EUSTIS, *Secretary*, 131 State Street, Boston 9, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, 441 Stuart Street, Boston 16, Mass.

1907

Having received from the Institute Alumni Office an address for Armen H. Tashjian at 332-19th Street, Northwest, Canton 3, Ohio, I wrote to him early in March seeking news of his doings. On March 18, I received a most gracious note from one of his daughters, Mrs. L. M. Backus, Jr., from the above address, from which I quote: "In answer to your M.I.T. class letter to my father, I am sorry to inform you that he is very ill and unable to write you himself. Nearly two years ago he had a cerebral hemorrhage which rendered him unable to carry on his work. He is now completely paralyzed and bedridden, having just been brought home from his third long stay in the hospital. Medical men say there is nothing more they can do. My mother and I are doing all in our power to keep him comfortable at home.

How he would have loved to return for his 40th reunion! Before this last bad sickness, he talked of it often, for it was at his 25th reunion that he fell in love with Cape Cod and each year since has taken his family back to West Harwich, where he bought a summer cottage. My brother, Armen, Jr., received a scholarship at Phillips Exeter Academy last fall and will finish his first year there this June. Both my sister and I are married. She and her husband are managing the Arthur Murray studio in Portland, Ore. As for my husband and me, we are the proud parents of a son nearly two years old. . . . I know that if my father were not so sick he would send you his kindest regards. Do extend his greetings to those who know and remember him." In reply to this, I wrote to Mrs. Backus a note of appreciation and sympathy. Armen was graduated in Course IV with '07 and secured his master's degree in 1908. He has been engaged in architectural work all his active life, chiefly in Cleveland, Ohio, although during recent years he was consulting engineer for the Union Metal Manufacturing Company of Canton, Ohio.

I have notification that the address of Charles E. Baker is care of the Charles B. Thomas Company, Box 109, East Point, Ga., but I have no knowledge of his work

or family or activities. — A letter from Harry Hall of March 10 indicates that he is chief engineer of the Washington suburban sanitary commission with office at Hyattsville, Md. — Willis G. Waldo writes on the letterhead of Florida Ramie Products, Inc., and his address is Box 1685, West Palm Beach, Fla. The dictionary says that ramie is an "Asian perennial plant of the nettle family" and that it has "a strong lustrous fiber capable of being spun and woven." Willis says he is engaged in some very interesting work, which he might discuss with us some day. He hopes to attend our coming June reunion.

Now note that June is next month when you are reading this. If you have not already decided to be with us then, make such decision right now and mail your registration to me on the form that you have already received or will receive very soon. On March 18, as I prepare these notes, there are 69 men whom we may reasonably expect, either because they have written their intentions or because they are stand-bys like Don Robbins, Gilbert Small, and such, who would not miss an '07 gathering unless they were sick. On March 8, Harold Wonson, Bob Rand, George Crane, and I were guests of Alexander Macomber for luncheon at the Union Club in Boston, where we decided on certain details of cost and program for the reunion. This group, together with Dick Ashenden, who will have charge of golf details at Oyster Harbors during our stay there, constitute the committee in charge. There is no question about this being one grand good time for those who are there. You can't have it by absent treatment. Whether this is a good time for *you* is entirely in your hands. — BRYANT NICHOLS, Secretary, 23 Leland Road, Whitinsville, Mass. HAROLD S. WONSON, Assistant Secretary, Commonwealth Shoe and Leather Company, Whitman, Mass.

1908

The midwinter meeting of the Alumni Association was held at Walker Memorial on Saturday evening, February 8. The excellent dinner, in cafeteria style, showed us how well the present student body fares. Congratulations are certainly due to Brothers Bridges and Carlisle of the Dining Service Administration for providing such fine food at such reasonable prices. Nine classmates attended — Myron Davis, George Belcher, Winch Heath, Harold Gurney, Joe Wattles, George Freethy, Ted Joy, Stiles Kedy, and Nick Carter. Your Secretary had the pleasure of following President Compton through the line collecting our food, but, of course, Prexy is an '08 man, too. The explanation and demonstration of television which followed the dinner was very much worth seeing. The talent of the members of the faculty who provided acts which were recorded by television was much appreciated, as it should have been, for they rate as professionals.

The third dinner meeting of the Class for the 1946-1947 season was held in the Silver Room at Walker Memorial on March 18, with the following classmates present: Bill Medlicott, Ray Drake, Karl Kennison, Harold Gurney, Stiles Kedy, Myron Davis, Jeff Beede, Linc Soule, George Freethy, and Nick Carter. The dinner, as usual, was

excellent. After an interesting "talkfest," Harold Gurney showed Kodachromes taken on his trip to the West Coast last summer, as well as Kodachromes taken during his sojourn in Florida this winter. Joe Wattles, while not able to be present on account of Rotary and town meetings at Canton, Mass., sent in some of his West Coast and Canadian Rockies pictures, shown at our January meeting, and Harold Gurney showed them again. I think everyone present had a good time and enjoyed the excellent Kodachromes. Linc Soule announced that he had become a grandfather again.

Jeff Beede was one of the ringleaders in the Antique Auto Show, which was held in Horticultural Hall in Boston during January. The following extract from the Boston Post will be of interest: "Prouder than any of the proud ancient automobile hobbyists whose prizes are on display at the Antique Auto Show at Horticultural Hall was E. Jeffs Beede of 123 School St., Belmont, . . . when he saw the mammoth, brass-trimmed touring car he bought as a young man more than 40 years ago standing among the other relics of automobilism's past. This ornate specimen of an early auto is a Royal Tourist, 1906 model, and is the centre of much attention at the show because it is unique on two counts. It is the only car among the many in the show that has been owned by a single family since it was delivered from the factory, and it is the only one of its kind in existence today. It cost \$3500 when new. For 34 years the old car was stored away in a barn on the Beede estate in Hudson, left to collect dust and ponder forgotten trips when it was the sportiest thing on the road. Then last summer, with the revived Glidden Tour to Columbiana, O., coming up, Beede's son, E. Bennett Beede of Trapelo Rd., South Lincoln, pushed the old Royal into the sunlight and began to fix it up. 'It wasn't much of a job,' his father said yesterday, 'because it was in running condition when I put it up and it had been kept in good shape. As a matter of fact, it still has all its original equipment. It never had a windshield, never had a self-starter, never had electric lights and never had a foot throttle — they just didn't have those things when I bought it.'"

The New York Times of January 5 had an interesting account of an interview with Bill Given, who is president of the American Brake Shoe Company. It ran as follows: "Decentralized management has paid big dividends to American Brake Shoe Company, William B. Given, Jr., President, disclosed here yesterday in describing effectiveness of their unique plan of 'Bottom-Up Management.' No longer an experiment, but a tested and successful group of established policies in all sixty American Brake Shoe plants, the methods place maximum responsibility for decisions upon foremen and superintendents within each of ten operating divisions of the company, Mr. Given explained. Under 'bottom-up management' the head of the business tries to release the initiative of every individual under him and to encourage personal enterprise and responsibility down through the organization. Ideas to improve products, to effect savings, economize in money, motions or materials,

to improve working conditions, flow up to the top from below in a continuous stream. Mr. Given said that under this plan the executive becomes head of a 'service department' instead of being a dictator. As 'service manager' of his company Mr. Given has seen his policies withstand the tensions of the depression period of the early Thirties. His company has doubled in size during the war. But this growth also has expanded the responsibilities of the supervisory staff and has welded supervisors and foremen closer to top management executives.

"Mr. Given described the actual working methods of the organization to other industrial executives who have been keenly interested in his success. The successful formula, which must be constantly improved and expanded as new problems arise, includes the following fundamentals, outlined by Mr. Given: (1) Convince supervisory people that they actually have 'freedom to fail' — that we do not expect them to make progress in their department if only sure-fire things are tried. (2) Believe sufficiently in the ability of other people 'down the line.' (3) Encourage supervisors to be the kind of men they would enjoy working under. (4) Develop leadership abilities. (5) Remember that age, old or young, is no handicap. (6) Establish a policy that no job, of itself, fixes a salary rate, but these are established by performance, and (7) Be realistic about improving human relations."

Cookie, our Class Agent on the Alumni Fund, reports as follows: "With a quota of 109 men we have received \$1,928 from 110 men, giving us 101 per cent of quota, with an average of \$17.53 per man. The average for the entire fund was \$17.40. I am indeed proud of '08. As the 1947-1948 Fund begins on April 1, the Class will hear from me all over again after that date. I wish we could interest the 100 or more men who have never joined the Fund group. I don't care about the size of the check, so long as they join."

Willard Rockwell, who, among his many business activities, is head of the Rockwell Manufacturing Company (Pittsburgh Equitable Meter Division), made the headlines again during January. The Pittsburgh Post-Gazette of January 3 said in part: "Confronted with a week-old \$3,000,000 portal-to-portal action, the Rockwell Manufacturing Company struck back yesterday at the filer — an AFL union with which most of its employees are affiliated — with a \$15,000,000 suit of its own. In its unprecedented action, the valve and meter manufacturing enterprise charged that 'some of our employees, in spite of a written contract, have not worked an eight-hour day or 40-hour week but have expected compensation for eight hours in each day and 40 hours in each week.' The \$15,000,000, the company statement continued, represents the amount lost at its local plant because of 'slow-downs and the admitted refusal to maintain production' since 1938, the year the Wage and Hour Act was passed. The union's portal-to-portal action was also dated 1938 in contrast to the usual procedure here. Most of the suits so far filed have gone back only six years, the length of the Pennsylvania statute of limitations."

We have received the following new

addresses: Monroe Ames, 441 East Town Street, Columbus 15, Ohio; Robert Amory, Anchor-Rome Mills, Inc., Crescent Corporation, 201 Devonshire Street, Boston 10, Mass.; Carl E. Hollender, Federal Power Commission, Room 1601, 11 Park Place, New York, N.Y.; Harry T. McGrath, 3410-39th Street, Washington 16, D.C.; Henry J. Noble, Apartment 207, 4260 Broadway, New York 33, N.Y.; and Frederick N. Peirce, 5 Inverness Road, Wellesley Hills 82, Mass.

The next and final meeting for the 1946-1947 season will be in May — i.e. on Thursday, May 15, at Walker Memorial, Silver Room, at 6:00 P.M. The usual notices will be mailed early in May. Please try to be with us. — H. LESTON CARTER, *Secretary*, 60 Batterymarch, Boston 10, Mass.

1909

In the Los Angeles *Times* of December 23 nearly half a column was devoted to Garnett A. Joslyn, III. It was headed by his picture, which looked much like that in the Album, with perhaps a few light touches which had been added by Father Time. The article told of his moving to Mexico City with his family to serve as manager for the Towne Securities Corporation of New York, which operates a number of mining properties in Central Mexico. The announcement was made at a Christmas party of the Los Angeles Chamber of Commerce mining committee, of which Garnett had been chairman for three years. For some time he had been prominent in Los Angeles as a consulting engineer, was past chairman of the Southern California chapter of the American Institute of Mining and Metallurgical Engineers and a director and past president of the Mining Association of the Southwest. He did his first important work as an engineer in the porcupine district of Canada and is well known in Nevada, where he was once connected with the Partners Company. We all may remember Garnett's activities at the Institute, where he was a member of the football team, Institute Committee, and the Tech Show chorus, and was besides stage manager, and later general manager, of the Show. He was also a member of the Class Day committee. In his new position he expects to spend considerable time in New York. We trust that he will look up the several '09 men who live in New York and environs.

Tom Desmond, I, continues to be active in the capitol at Albany urging constructive legislation. He has proposed a bill — and the legislature is considering it — which should enable prison and state hospital authorities to prevent at least a few crimes on the part of persons who are sexually abnormal. Instead of drawing a jail sentence which he could serve and then become free to commit more crime, the offender is turned over to the State Department of Correction when a court decides that he needs psychiatric treatment. On a second offense, the transfer to the Correction authorities is mandatory. In their hands he is given the type of mental treatment that appears necessary to straighten him out. And Paul adds: "The editorial about sex crimes was in — of all our New York dailies — the *Daily News*, our most flamboyant and sensational tabloid. It has an unbelievable circulation,

up in the millions. And when they mention the work of a man like Tom, that is indeed news, and what they are saying seems to me a very favorable slant on what Tom is trying to do. My wish is that there may be more legislators like Tom. Then there is the clipping about food for children. There again is the unselfish and altruistic touch that, to me, pervades all that Tom undertakes. And I say more power to him!" (This latter comment refers to the fact that Tom, as chairman of the joint legislative committee on nutrition, reported that throughout the state large numbers of children show widespread nutritional deficiencies.)

Steve evidently made a hurried trip to New York, for we received the following from him: "I have been enjoying the March Review. Incidentally, when I taught at the University of Maine, it was at Orono. When did it move to Brunswick? (See Charlie Johnson item.) I was sorry to miss the luncheon of pulp and paper technical men at the paper convention in New York last month, because of two other lunches that day — and a limited capacity. Returning from New York, I had time to look in at my office, eat lunch, repack the old valise, and start for Espanola and Marathon, Ontario, with a photographer. We got a good gross of good pictures of the KVP Company, Ltd., and Marathon Paper Mills of Canada. The former has converted a newsprint mill to produce bleached sulphate pulp; the latter has built the newest mill in the world to manufacture the same product. Feature articles will be published in early issues of *Pulp and Paper*." Our answer to Steve's question concerning Charlie Johnson and the University of Maine is that the university, in order to take care of the large overflow of G.I.'s, took over several of the buildings at the Brunswick airplane base after it had been abandoned by the Navy. Charlie remained there to teach drawing (see the January Review).

We have heard again from Art Morrill, XI, from Chungking, China. He is in the United States Public Health Service, devoting his abilities and energies to improving conditions in China, a work that is much needed. He writes as follows: "This morning after breakfast my cook got me to go out and inspect 110 catties of charcoal he had just bought for \$120 a catty. He is a nonsqueezing servant, I am assured by experts, and wanted to assure me that the terrific expense of keeping my feet warm is all legitimate. These catties — China is so much ahead of the United States — are now exactly 500 grams, and \$120 is now about 2.7 cents U.S. I use 15 or 20 catties of charcoal a day, and by jumping up and down occasionally and wearing many clothes, I manage to keep fairly warm. Right now my desk thermometer says 58. But even at that, the cost of my charcoal alone amounts to almost as much as the pay of the cook, out of which he supports a wife and at times sends money to his family in far Fukien. So most Chungking people do without a fire and put on more clothes, if they have them. And even those with few clothes don't seem to mind the cold so much as you would expect. I think my visitors find my room a bit stuffy at 58.

"The Maine Coast, the cruiser, and the runabout sound very delightful. I fear,

alas! that that 'cruiser' must mean a power boat. I am not a plutocratic boat owner, but I belong to the Detroit Yacht Club and a few years before the war learned to sail the club catboats. There is nothing like it! As an 'awning hoister,' I of course regard powerboaters with some suspicion, but still consider them vastly superior to ordinary folks."

Also, Art is attempting to get in touch with Arthur Knipp, who, as we have already reported, has returned to China to teach physics and electrical engineering at Lingnan University. — PAUL M. WISWALL, *Secretary*, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 285 Madison Avenue, New York 17, N.Y.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

1910

During the past month I have had practically no news from the members of the Class outside of casual meetings with those who live in the vicinity of Boston. Dean Peabody, however, saves the situation with the following letter: "I spent three days in Cincinnati at a convention of the American Concrete Institute, from February 24 to 26. On February 25, I was invited to dinner at the home of Nathan Ransohoff. Bradley Jones and his wife were also guests. It was quite a pedagogical gathering, as Bradley is head of the aeronautical department at the University of Cincinnati. Mrs. Jones has night classes there on nutrition and home economics, and Mrs. Ransohoff also gives courses in child care. Nathan is president of the N. Ransohoff Company, which makes machines to clean the surfaces of metals. Needless to say, the rest of 1910 and our old-time professors had a thorough going over." — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston 8, Mass.

1911

Once again 1911 has made a fine record in the Alumni Fund, for at this mid-March writing, with but half a month to go on Alumni Fund VII, we have contributed \$5,475 from the same number of classmates (149), an increase of \$133 subscribed, making us fourth in per cent contributors (123 per cent) and fifth in per cent amount (195 per cent). As these notes appear, the new Fund will be a little over a month old — support it immediately!

Add to the junior 1911 romances: Mr. and Mrs. Cleon Ruppert Johnson, X, announce the marriage of their daughter, Ellen, to Theodore Z. Haviland, Jr., on Saturday, the 15th of February, Unitarian Church, Ridgewood, N.J. On June 7, at Woonsocket, R.I., Janice Rounds, daughter of Mr. and Mrs. Frederic W. Rounds of that city, will be married to George Wheaton Denison, younger son of Mr. and Mrs. Orville Boardman Denison of Gardner, Mass.

Through the thoughtfulness of Raymond C. Reece, Toledo consulting engineer, we received a copy of the memoir of Ike Hausman, I, as written for the American Society of Civil Engineers, subsequent to his death on October 29. Born in Russia on February 5, 1889, he came to this country with his parents when about three

years old, the family settling in Kansas. He obtained part of his engineering training at the University of Kansas and then came to M.I.T. and was graduated with us, always a loyal and active member of the Class. After field work in various sections of the country, he moved to Toledo in 1913 to work as structural engineer, designer, and detailer for the Toledo Bridge and Crane Company. In 1914, he started his own business, the Hausman Steel Company, to do structural engineering work and to supply fireproof building materials. A bit later, he acquired the patent rights of the Ambursen Form System from the Blaw-Knox Company and subcontracted for the steel form work of reinforced concrete buildings all through the eastern United States, from Main to Wisconsin and Texas to Florida, including such outstanding work as the \$18,000,000 Charity Hospital in New Orleans. His firm specialized in rigid frame construction and other indeterminate forms of concrete work, developing some very novel designs.

He was a member of several professional societies, an ardent Rotarian, and particularly active in the concrete form section of the Concrete Reinforcing Steel Institute, in standardizing sizes, improving techniques, raising the ethical standards, and dispatching any other work that would fall to that section. He was married on March 10, 1915, in Toledo, to Clara Staadecker. He is survived by his widow; three sons, Frederick I., James S., William L.; his mother, and four brothers. He was elected an A.S.C.E. member in 1923.

The memoir has this stirring two-paragraph conclusion: "Outside of professional and business activities, one of his chief interests was golf, a game which he learned late in life, after the pressure of developing a business permitted some relaxation. For a number of years he was active in Glenary Country Club, Holland, Ohio, once being presented a plaque commemorating his active guidance in reconstructing the club. Though trained in the cold science of engineering, Isaac Hausman's interests were very largely with human beings. He was vitally interested in all of his employees, their families, home life, successes and difficulties. He was similarly interested in the personal lives and successes of his customers, suppliers, in fact with anyone with whom he came in contact. His memory of intimate details in the lives of casual acquaintances was phenomenal."

In its March second "Popping Questions" feature, the Worcester *Telegram* popped them at Fred Daniels, VI, a native of Worcester, who joined us at the beginning of our junior year, after transferring from Yale's "Sheff," and has always been a loyal classmate. When asked what one best remembers about college days, Fred answered: "The friends that you make there and the companionships that develop. The social side of college life is always the best remembered." He started out at \$15 for a 48-hour week with the B. F. Sturtevant Company in Hyde Park, but after two years came to his native Worcester to work for R. Sanford Riley, who had just organized a new stoker company bearing his name. He has been president of the Riley Stoker Corporation since 1926. Explaining his boyhood ambition to be a tow boy,

Fred said: "That was in the day of horse-cars, and those horse-drawn cars going up Lincoln Hill could never make the grade without a tow boy. His job was to ride a horse down the hill, hook onto the next horsecar that came along and help pull it up the hill. Then he would turn around and have a nice horseback ride down the hill again — it looked like a swell job to me when I was a small boy!" For recreation he listed walking first, then fishing, hunting, and a "small amount of tennis and golf." He said his chief hobby is getting ready for and going fishing for Atlantic salmon. "Once you have caught a big *Salmo salar* fresh up from salt water," Fred continued, "you are completely spoiled for any other kind of fishing. Weight for weight, the Atlantic salmon is the sportiest fish that swims, and I have tried practically all species. Some day I hope to go up the Labrador Coast and fish for salmon in some of the rivers where a white man goes about once in 20 years."

Fred and his wife, the former Eleanor Goddard — "she lived only two houses below me on Salisbury Street" — have a daughter, Eleanor, who is in New York working for Macmillan and Company, and a son, Bruce, who is a junior at Yale University. His favorite dish is cheese soufflé, "but it must be puffed up so that it is about six inches high, and then you must have a cream sauce with mushrooms to go over it." For dessert, he prefers toasted hard Bent's biscuits with cheese, "the stronger the smell of the cheese the better." A fine recent picture also featured the article.

Howard Williams, XI, newly elected president of Erwin, Wasey and Company, Inc., international advertising concern, revealed in a recent note, acknowledging congratulations on his well-deserved honor, that he had spent three delightful weeks in Brazil in early February. — Making the best, in sunny Mexico, of an enforced and extended convalescence from a recent attack of pneumonia, as reported in last month's notes, Bob Haslam, X, thankfully acknowledged a letter written by your Secretary, saying: "Pneumonia certainly hit me suddenly. I had no cold or other indication that I was about to get it; so when I went down with it within eight hours after arriving at Mexico City, I was quite surprised. I am glad you had a fine gathering of 1911 men in New York and hope I shall have the pleasure of attending the next. Our medical department is not letting me go back to New York until the weather is satisfactory, probably sometime around the 10th or 15th of April. It was mighty nice to receive your letter, and it was surely appreciated. Best regards to you and the other 1911 men."

Here's another classmate who, at long last, succumbed to the write-to-Dennie admonition — C. L. Bartlett, II, 128 James River Drive, Hilton Village, Va. "You are surprised, I know, to receive a letter from me," he writes, "for the first time since graduation! But I really have had writing to you on my mind a long while, to let you know my appreciation of your very consistent good work as class secretary over all the years since 1911. I particularly wanted to attend our 35th reunion but just could not leave here at the time. It was the same in 1941 and 1936 — things wouldn't work out. I have lived in or near Newport

News ever since World War I and have been connected with the Newport News Shipbuilding and Dry Dock Company over the entire period. I married in 1920 and have two sons, Robert, 21, and Richard, 18."

After asking advice as to how best to enter his older boy for postgraduate work at M.I.T., he continued: "Before the war came on, we had expected to send Robert to M.I.T. and had started a move in that direction. But he joined the Navy V-12 program while a freshman at Virginia Polytechnic Institute and was sent by the Navy to Rensselaer Polytechnic Institute, where he was graduated with a B.M.E. degree in June, 1945. After four months in midshipman school at Fort Schuyler, N.Y., he was made an ensign and sent to the U.S.S. *PC-1077* (a 170-foot patrol craft), wherein he served for about seven months as engineering officer. Since being discharged in August, 1946, he has been working in the hydraulic laboratory and model testing basin of the shipyard and is also taking a night school course in Spanish conversation and typewriting. Recently we have added a farm to the family cares. On this farm, across the James River, some peanuts, corn, and hogs are raised, but the boys don't care for corn and hogs and not too much for peanuts. I guess we shall have to stick to engineering for a living, at least so far as they are concerned. Thanks for keeping me so well informed about the Class, by letters, Review notes, and Thelevener."

Tech Show is being revived — there's a thrill note for a number of us! An original musical comedy, "A Liberal Life," will be produced by students and their wives and staff secretaries at Jordan Hall in Boston, on May 2 and 3. One of the three producers is Bob Hildebrand, son of Walter Hildebrand, I.

Those of us at the 1911 luncheon in New York in January got such a kick out of Don's recital of his "Adventure in Manure," that I believe you'd all like to hear of this incident that occurred during Don's 1946 enforced rest, which kept Don and Lois from our 35th. It happened in early June at Maple Shade Farms in upper New York State — the farm of their daughter and son-in-law — that one day a hum-dinger of an electrical storm struck towards late afternoon. During a lull, Don and his son-in-law, Bob, set out to get the cows from the far pasture. They finally got them in their stanchions only to find that the electrical apparatus had been knocked out to such an extent that it was unsafe to use the electric milking equipment, icebox, stove, pump, lights, and so on.

"Cows can't wait," relates Don. "They have to be milked. There was only one efficient milker in the family — Bob — and he had a vision of 25 cows to milk by hand, an almost impossible chore for one man, so Lois, Jr., the hired boy, Joe, our son, Carver, and I all agreed to try to help." Using upside-down pails for stools, most of them were getting along well enough. "They gave Dad a kind old white cow," according to Don, "and much to my surprise, after considerable experimentation, I began to get a few drops, then a small stream and eventually, after a long period, finished the cow, subject to final stripping by Bob. Bob was milking about three to one against the rest of us." Don

then looked for another "kindly" cow, but finally agreed to "finish off" a cow for Joe, who "had his head in her ribs and was keeping her reasonably quiet, even though the cow was standing diagonally in the stall." Oblivious to the necessity of putting his head against the cow's ribs, Don found she didn't like her diagonal position, his ministrations, or the unusual excitement. "In fact," according to Don, "she didn't like anything at all!"

"As I sat there pulling and yanking, with a pail between my knees half full of milk, this recalcitrant and unfriendly animal lifted her right leg and stepped across my lap. (I am grateful she didn't step into my lap.) She knocked the bucket out from in between my knees and laid me flat in the gutter. The kids all came running to see whether I were dead, and I might as well have been, because I was covered with milk from head to foot in front and was lying full length in you-know-what behind. My pants and shirt, face and hair, eyes and ears were full of milk. The less said about the mess behind, the better."

Staggering back to the house, he encountered Lois, Sr., and abjectly said he was in bad again and that he needed a bath. "She wanted to be sympathetic," Don continues, "but naturally had to show some sense of humor, with uncontrolled laughter, before finally saying: 'Why you know there isn't any water in the house, let alone hot water, because the pump is off.' When I insisted she do something, she said she had a tiny bit of lukewarm water in the stove receptacle and so soaked a towel in it and gave it to me to wipe myself off as best I could. So I gingerly removed one piece of apparel after another and swabbed around with this wet end of a towel, feeling very humiliated and somewhat bitter on life in general.

"The milking was ultimately finished with the help of a neighbor lady, and the cans were put in the cooler with nothing to cool 'em. Since the power company could guarantee no time when service would be resumed, everyone went to bed wondering whether the milk would be spoiled by morning — as a matter of fact, one can was rejected by the dairymen's league which could have been saved if we had known that the power was restored by midnight. But by that time we were all asleep, recovering from our distress, and no one knew enough to get up and turn on the cooler!"

Here are three address changes from the Alumni Office: Harry E. Lake, I, Palestine District, Newton, Conn.; Chester T. Morey, II, 53 Benton Road, Belmont 78, Mass.; and Col. Laurence Watts, I, Quarters No. 40, Holabird Signal Depot, Baltimore 19, Md. Oh yes, the Roy MacPhersons have moved into their new home at 80 Warren Road, Framingham — just across the street.

Make your plans now to join the "Take Me Back To Tech" movement for Alumni Day. See you then, classmates! — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

1913

So far, out of 15 expressions on where to hold our 35th reunion, five are for the Cape or North Shore, six for Boston, and four are

neutral. Dave Nason, XIV, wants it near the water by all means, but nearer a bar. He feels a speech coming on.

Through the kindness of Al Townsend, II, we have the following from *Lubrication*, the Texas Company's technical magazine: "Allen F. Brewer, III, the present editor (in reality editor-in-chief) of 'Lubrication,' has held that post since July, 1922. His able service to this publication thus spans all but a year of a quarter-century. The well-ordered and well-written pages of 'Lubrication' itself each month are the highest testimonial to his capabilities, talents, and enthusiasm for his work, to which he has brought an interesting background of training and experience. Many of the articles are prepared by him; others are prepared by experts in their respective fields, in order to give the reader the most authoritative information on the theory and application of petroleum fuels and lubricants. Allen Brewer was graduated from . . . Technology, Class of 1913, in Mining and Metallurgy. He then worked with the New Jersey State Board of Public Utility Commissioners as inspector and evaluator of power plants and utility properties until 1917; and joined the American International Shipbuilding Corporation just before this country entered World War I. Early in 1918, Mr. Brewer enlisted in the U.S. Navy and was promptly detailed to the United States Navy Steam Engineering School at Stevens Institute of Technology, from which he was commissioned with the rank of Ensign. He served on active sea duty in European waters. From the Navy, Mr. Brewer came to the Texas Company in June, 1919, as Fuel Oil Engineer with the Export Department. A year later he was transferred to the Refining Department and assigned to Port Arthur, Texas, where he subsequently became Plant Lubrication Engineer.

"In July, 1922, as a member of the Sales Department, he was brought to New York and took over the editorship of 'Lubrication.' His present status with the Texas Company, which he has held since 1928, is Technologist (Engineering) with the Technical and Research Division of the Refining Department. 'Who's Who in Engineering' lists Allen Brewer as a member of the American Society of Refrigeration Engineers, and Association of Iron and Steel Engineers. He is also a member of the American Society of Mechanical Engineers, the American Society of Lubrication Engineers and is a licensed engineer in the States of New York, New Jersey and Pennsylvania. For many years he held a marine engineer's license. His by-line has appeared over many articles and papers on various aspects of lubrication which have been printed in a wide list of trade and technical publications."

The sons of Jim Russell, II, recently out of the Navy, have gone into the boiler business with their father. They are both graduates of the University of New Hampshire, without engineering background, and are considering taking courses at the Lowell Institute, of which Al Townsend is the head. Karl Briel, I, has finished his work with the Division of Industrial Cooperation, at the Institute and was planning to go into the consulting business, industrial methods and efficiency. Karl's son came out of the Army as a captain and

is trying to enter M.I.T. Al says that he saw Jack Farwell, II, in January. Jack was the same as ever and full of plans for expansion at Sperry Products. Jack says that Ken Hamilton, II, was back with the Faber Pencil Company, in Brooklyn, where he had a lot to do with the recent developments of the ball-point pen. The daughter of Steve Braude, X, was married in Boston on last November 30, to Joseph M. Edinburg. Dorothy is the apple of Steve's eye. Arthur E. Hirst, V, published in the January issue of *Cotton* an article on braided fabric manufacture, based on observations at the Heywood Narrow Fabric Company in Fall River. Arthur is a technician, with the Standard Chemical Products Company, and his article, somewhat in my line of work, impressed me.

Bill Ready, VI, wrote as follows: "You know that very soon we are going to have another reunion. Mac is getting lined up for the first blast. He tells me that now he has enough money in the treasury to start the ball rolling. It doesn't seem like 10 years since that last reunion of ours, and believe me, plenty of water has gone over the dam. That five years of war went like a flash. We were truly servants of the Army and Navy, and especially the Navy. In fact, our work will not be completed with the Navy until April of this year. During this period, I went to just one place — Washington. I think it would have been better if I had established another home in that city, as I spent as much time down there as in Boston. It is very refreshing to be able to see a little of the rest of the country. Our whole gang is home now out of the Army, and they have finally found their own homes. Christmas of 1945 was the grandest we ever had. Bill got in Christmas morning at 1:30 A.M. from the South Pacific, and you can imagine our feelings. During the greatest portion of 1946, we had 14 in the house. Things are less crowded now, and everybody is getting reasonably back to normal." Colonel Ed Gere, I, has moved from Horseheads, N.Y., to La Jolla, Calif. Ed is a career soldier.

We have some interesting bits, among the early replies to our annual letter. From Clarence Berry, VI: "I may really be tempted to attend the 35th anniversary next year. I think I should prefer Boston, however. I can hardly wait for the boating season to begin again. I live on the Severn River near Annapolis, and my hobby is being on the water, where I have a lot of fun playing around with my Matthews cruiser. Last year I was commander of the Annapolis Power Squadron, which is a local unit of the United States Power Squadron. I should certainly like to see you sometime." From Harold Hopkins, IV: "I have been doing quite a lot of flying, piloting my own private plane. California (Los Angeles Chamber of Commerce, take notice) is a wonderful state to motor over, but to fly! — words fail me. A short hop I made the other day from Palm Springs to Death Valley was the most thrilling trip I have ever taken. The clear, perfect day enabled me to see the lowest and highest points in the country all at once. I am president of the Flying Farmers of California — an interesting job at this time, while legislature is in session at Sacramento." From Hilding Carlson, VI: "Although I shall probably be on the West Coast in June, I think the

idea of a reunion at the Cape is good. I hope you can hold the reunion in the latter part of the month so that I might make it. I haven't much exciting news about myself. I'm plugging along as usual but have been doing considerable work for the Boston Rotary Club, on foreign relief. I have managed to talk our members into parting with about \$6,000 for this worthy cause. It was good hearing from you, and I hope I shall be able to make it."

From Howard Currier, II: "Although June, 1948, seems a long way off, I suppose it is not too soon to begin making plans and perhaps taking some sort of vote. Personally, as one of those who would be coming from quite a distance, if things at that time happen so I can attend, it seems to me that we could enjoy a get-together right there in Boston as well as anywhere else. As to ideas in general, I hope that the committee on arrangements will not lay too much stress on any outdoor sport or golf tournament type of affair. I should appreciate fully as much the mere opportunity to see old friends again and talk over the good old days which ended in June, 1913. As for news of myself, there is more than usual. After 17 years with the Oldsmobile Division of the General Motors Corporation, in various chassis engineering and experimental engineering capacities, I pulled out last August and joined the New Ford Motor Company organization, having been made chief engineer of the Ford Department. So I am now living in Dearborn instead of Lansing, which meant two real-estate transactions, and in general that we are enjoying a complete change." From Bob Portal, VI, who publishes an automobile trade list: "As the Cape is one of my favorite spots, I should enjoy a reunion there very much. However, I will abide by the wish of the majority. I'm still in the same business, and it has been rushing since we have begun to get some new cars. Because of the dear landlord in Boston, we were practically forced to buy a building on Beacon Street and feel really quite happy about the whole thing."

Rhys North, IV, is senior architect at the Norfolk Naval Shipyard and boasts of four grandchildren. He writes as follows: "At the present moment, I don't see how I can make the reunion. My last experience of a reunion at Wesleyan University (which I attended for two years before I went to Tech) was that the boys all seemed like strangers to me. My old roommate had white hair as a result of his scramble for money, and the crowd tried to drink its disappointment away. Remember, I was art editor of 'Technique'? I am still chasing the athletic values, with enough money to get along. I hope each will have a good time in his own way." I can assure Rhys that his fine art work in 1913 Technique is not forgotten and that we won't seem like strangers if he will only come to our reunion. Jerry Lane, V, definitely reunion-minded, said: "I am very much in favor of having our 35th reunion on the Cape. I still remember the good time we had at our 15th at the Chatham Bars Inn and think it would be well to try a repetition of that good time. I have not written you anything about myself in a long time and will now try to tell you a few facts. My only child being a girl, I haven't been able to use M.I.T. for educational purposes in my

family. However, I have a grandson, who is three years old; so in about 15 years from now, I am sure I shall have a descendant at the Institute. On the first of January, I was appointed assistant manager of the Kodak Park Works of the Eastman Kodak Company. This is the largest plant of the company and the one where all the film, paper, and photographic chemicals are manufactured. I find I am kept quite busy and do not get away much so as to run into my classmates, but I hope that if any of them are in Rochester they will stop in to see me."

George Bakeman, XI, is back in this country, and writes under the letterhead of the Medical College of Virginia at Richmond: "It is hard to believe that we are approaching a 35th, but if you say so, it must be true. In the past, I have always been out of the country when we have staged an important reunion, but I hope for better luck in '48, as I seem to be fairly permanently settled in the States. I've been back here now since the Germans drove us out of Paris in 1940, except for last year, when I returned to France for a while on a civilian relief job. As far as I can say now, the reunion might as well be near Boston as anywhere." H. Kenneth Franzheim, IV, deep in the heart of Texas, finds it impossible to attend our 35th. Ken is practicing architecture in Houston and would be glad to see any of us who may be there. Ben Munch, II, is making automobile and special forgings at Plantsville, Conn., and hopes to come to Boston in June, 1948. Al Katz, XI, is bearing up under "the grind of keeping business moving in the face of raw material shortages." Yes, Al, you and many others.

The United States Steel Corporation released the following statement on February 1: "Joseph J. Strachan has been appointed general staff manager of sales for the Carnegie-Illinois Steel Corporation, it was announced today by Thomas J. Hilliard, vice-president in charge of sales of this United States Steel subsidiary. A native of Wilmington, Del., Mr. Strachan was graduated from Technology in 1913. Before World War I, in which he served in the Navy, he was engaged in railroad and industrial design and construction work with Westinghouse, Church, Kerr and Company. From the time he left the service, until he joined Carnegie-Illinois in 1940, Mr. Strachan was engaged in the manufacture of chemical products with the General Chemical Company and Congoleum-Nairn, Inc., except for an interim of five years as industrial and financial consultant with Sanderson and Porter. Mr. Strachan came to Carnegie-Illinois from Congoleum-Nairn as assistant to the chief engineer. A year later he was made assistant to the president, the position he held at the time of his present appointment." Joe, himself, came across with a newsy letter: "It is so long since we have exchanged letters that I welcome even the form letter of February 11 — not that the pot would be calling the kettle black, by any chance. As to the June, 1948, reunion, it is my belief that it should be held outside the city — whether on the Cape or the North Shore or elsewhere is, I believe, immaterial. The point is that our classmates have attained an age at which urban pleasures (?) should have begun to pall on

them. No doubt Bill Mattson and Bill Ready, together with you and Joe MacKinnon, will make eminently satisfactory arrangements, wherever it is decided to hold the affair. The steel business, particularly during the war, has generally confined my activities to the vicinity of Pittsburgh and Chicago. On my occasional visits to New York, however, I have visited with Jack Coe, Larry Hart, and Ralph Rankin. As you will see from the attached notice, the odds are that I shall hereafter spend more of my time on or near the sales firing line — and who knows, I might even visit our Boston office occasionally. My son Dick, at 26, is in Canada studying for the priesthood. Peter, at 16, has another year to finish at the Gunnery School in Connecticut, and Hugh, at 13, has four years more of Shady Side Academy ahead of him. Molly is in good health except for a touch of arthritis, with a bursitic shoulder thrown in for good measure. I am still pursuing my quest for a satisfactory degree of golfing skill and in general continue disgustingly healthy. Hoping you and yours are the same, Fred."

Frances Stern, V, wrote from the department of nutrition in Tufts Medical School, as follows: "Enclosed find one dollar as my dues, and I shall be very happy to add to this if necessary for the reunion. I am sorry, however, that I cannot attend on account of physical difficulties. I keep closely in touch with Technology interests, not only through the Alumni Association but also the M.I.T. Women's Association. You will be interested to know that one of your Class has 'arrived.' By that I mean that I am now in 'Who's Who.' The food clinic at the Boston Dispensary, which shows the marked influence of Mrs. Ellen H. Richards '73 and Professor Sedgwick, has been named the Frances Stern Food Clinic by the trustees of the Boston Dispensary. It is now 29 years old. This last summer, Lippincott Company published my latest book, *Dietetic Care in Pictures*, and it has gone into a second printing. *Applied Dietetics*, which is published by Williams and Wilkins, in Baltimore, Md., has also gone into a second edition. Until the time when Professor Clair E. Turner '17 retired from the Institute, and there were no longer any courses in health education, we had students in that department from Technology. Now, we often have special students who are working with Professor Robert Harris '28 of the Department of Food Technology. I wish you men who remember Mrs. Richards in your courses in sanitary chemistry would some time remember her in your writings or meetings, for the science of nutrition — about which she cared so much, and in which she was a pioneer — has now become of vital interest to men and women in all fields of public health. Always with happy remembrances of my associations with the boys of the Class of 1913. . . . I am sorry that Frances cannot be with us next year and congratulate her on accession to 'Who's Who in America.' — FREDERICK D. MURDOCK, Secretary, Murdock Webbing Company, Box 788, Pawtucket, R.I.

1914

Many of us had the pleasure of seeing a most lifelike picture of Ray Dinsmore in the newspapers around the country on

March 13. Ray is shown in a large advertisement of the Goodyear Tire and Rubber Company, showing the world's first nylon automobile tire to Chairman Litchfield and President Thomas of that Company. Classmates who know Ray probably got quite a chuckle out of the picture. The expression on the faces of the people, including Ray himself, indicates that Ray had told one of his inimitable stories directly before the picture was taken.

While in New York recently, your Secretary had luncheon with Ross Dickson, principally to discuss the Alumni Fund. Once again the Class has backed up Ross and, in spite of the loss of several members, has met its quota both in numbers and dollars. As the Institute, in common with educational institutions in general, is hard pressed during this immediate postwar period, these funds, which are used for capital purposes, are needed now more than ever before.

Alden Waitt has called your Secretary's attention several times to the fact that an undue amount of publicity has been given him in these notes. This comes about from Alden's activities. Your Secretary, however, cannot refrain from quoting the headlines which appeared recently, because they are entirely out of line with the other activities that have been reported regarding Alden in these columns. The headline reads: "General Waitt to Lead Parade May 30 — To Preside Over Dedication of New Victory Playground."

Remember, Alumni Day at Cambridge is Saturday, June 14. — HAROLD B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York 19, N. Y.

1915

Although our final score in last year's Alumni Fund is not yet available, I urge you to send your check promptly for this year. Keep 1915 over the top.

Here's a delayed Christmas card from Norman Doane, Charlotte, N.C.: "Please accept my belated congratulations on behalf of yourself and Mrs. Mack (whom I hope to meet some day) . . . I was in Boston for a day or two the week our reunion was held. But I could not stay over the week end for the big affair. I had the family along, and we had to get back to headquarters. . . . I saw Leicester Hamilton at the Institute and looked around a bit. I took my wife and daughter to Durgin Park's for steak, and then to the Pops. It seemed like old times! Yes, I vote for reunion as often as every other year at least. Five years is too infrequent for such celebrations, considering that we have all passed the half-century mark."

Ben Neal feels as I do with the wish we could get together oftener: "It was nice to know that you thought of me on Valentine's Day; and we, too, thoroughly enjoyed the afternoon we spent together in Boston. I only wish that it could be a half-dozen afternoons — our trouble is that it's too long between drinks."

Jim Tobey followed up his good letter with a Boston visit. His overseas hitch of 32 months left the old Colonel none the worse for Army wear and tear. Jim entertained us at lunch with some tales of his colorful and exciting experiences. We later

visited Bill Campbell at M.I.T., and he and Jim had a lot in common to discuss, with their interest in foods. Bill, charming as ever, interspersed some new stories for a few laughs. Jim writes: "Having been struggling with my federal income tax for several days, I need to do something more pleasant and relaxing, so will write to you. I trust that you have now more or less recovered from the stresses and strains attendant upon the recent nuptials. . . . Last Monday I became a grandfather once again; my son's wife had a boy, James Richard, born in United Hospital in Port Chester. Their daughter, Cathleen, is now about 15 months old. One or both may be a candidate for M.I.T. . . . Since February 17, I have been doing two radio programs and soon may have a third. In addition to my Yankee morning broadcast, to which your spouse has indubitably listened and been edified, I now have the 'Ask Dr. Tobey' program over WOR in New York every afternoon at four. . . . Except for the acquisition of a new Buick, that is the news. . . . I expect to be in Boston on March 17 and if possible will telephone you. Let me know when you come down this way, as I hope to see you and entertain you."

In New York, I had a pleasant visit with Tower Piza, a delightful host. After his exciting war years in England, he has settled down to architecture. I was unable to learn the extent of any of his other activities. — Our congratulations and best wishes on another class daughter's wedding. Joe Livermore's daughter, June, was married to Harold Bishop Reid, Jr., on January 25 at Dover, N.H. A long, happy wedded life to the young people!

I'm sure you'll all join me in being pleased and relieved to know from San Willis's fine letter that he has recovered so completely from his recent thrombosis attack: "I have been on the job every day except for a few in which the flu laid me low; so I shouldn't complain. It is true that, for the first three weeks, I was mighty glad when Saturday rolled around, but for the past three weeks I have felt stronger each week, and the doctor appears to be well pleased with my progress. He still maintains that it will be a full year, or next October, before I shall be really myself again, but I can wait for that so long as I know that the improvement is steady. My work is progressing, and I have high hopes that it will be far enough advanced by June 15 so that I can take a three months' leave of absence, as the doctor strongly recommends, and complete the cure in Maine and Massachusetts. There are still a lot of 'ifs', but I do have hopes. That would also enable me to lay a few pipes against the time when I can turn over the development work here to someone else and return to the East for good."

"From all accounts, you have been having some pretty rugged weather back East. At least, Peg wrote that for several days they were practically marooned. We were not much better off except for the snow; we had little of that, but we did have a long spell of cold, disagreeable weather which kept me pretty well housebound. It was great seeing you both while we were at Peg's, and I only regret we could not have repeated during our stay here. Let's make it a date for next summer, anyway."

Perhaps Frances and you can come down to Maine over a week end when you have business in the direction of Portland. . . . Anne joins me in wishing you both the best of everything with the further hope that we may get together again in the near future."

Material and letters for our monthly notes column are running low, if not completely running out. What do you say to a few letters about yourselves, especially you chaps who did war work? It's all over now — you can tell about it, and your classmates will be interested to know what you did. Send your Alumni Fund check, shower down those letters, and you'll "help Azel" immensely. All the best! — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

1916

Last month it was our sad duty to record the death of Burkett D. Newton of South Pasadena, Calif. We recently received the following letter from Mrs. Newton: "Thank you for your kind letter. I am very appreciative of your sympathy upon hearing of Burkett's death. I am not sure how full an account I should send of his activities, but perhaps from this record you can select what you need: After receiving a B.A. from Yale in 1914, he attended Technology and Harvard. He was associated with the Pacific Gas and Electric Company at the hydroelectric station in Oroville, Calif. He then worked as an electrical engineer with the American Gas and Electric Company in Canton, Ohio. He was secretary to the manager of the Mahoning and Shenango Railway and Light Company in Youngstown and vice-president of the Magnetic Signal Company in Los Angeles. He was also a board member of the Farmers and Merchants National Bank and the Southern California Building and Loan Association. During World War II he was commissioned a captain in the Army Air Forces, and after his course at Officers Training School, he was stationed at the De Soto-Warren plant of the Chrysler Corporation. He was discharged in May of 1945." Burkett's widow, Edith Capron Newton, whom he married in 1919, is now living at 1212 Milan Avenue, South Pasadena, Calif.

Clint Carpenter sent us the following splendid letter: "I was delighted to hear from you, and I find the notes particularly interesting. When I read Frank Hastie's letter, I was reminded of a wedding I attended several months ago. I discovered later that Frank also attended, but we either did not see, or failed to recognize, each other. I was very sorry that I did not have the pleasure of talking to him. I have been in the same business ever since leaving the service after World War I [the Carpenter Construction Company, engineers and contractors, Bank of Commerce Building, Norfolk, Va.], and have made my home here since that time. This period of reconversion has been a little dull, but we have managed to keep fairly busy, and the prospect is that there should be considerable activity in the construction field over the next few years. As you know, we specialize in heavy construction, including bridges, foundations, and marine terminals and industrial buildings. For the past several years, we have lived at Virginia Beach, only 20 miles from

Norfolk. My daughter, Sylvia, who is 19, is now at Finch College in New York, and my son, Jerry, who is 15, is at Woodberry Forest (Preparatory) School in Woodberry Forest, Va. I am not sure yet whether he will want to follow engineering or not and hence I am not certain whether or not he will become an M.I.T. man. My principal hobby is sailing, and, since the other members of my family also like anything that has to do with the water or boats, it works out pretty well. I have a Sewanhaka Schooner, which we brought down from Fairhaven, Mass., some years ago, and we have a great deal of pleasure with her, keeping her usually in Chesapeake Bay. My wife, Phyllis, who has returned from a few weeks in Florida and Nassau, insists that I take the boat to Nassau next winter: so far I have not committed myself too definitely."

A note from Tom Holden's secretary at the F. W. Dodge Corporation informs us that Tom is on a transcontinental speaking tour and not due to return until the middle of March. We are anticipating an interesting account of his trip for the next issue.

Our President, Bill Farthing, forwarded some interesting observations: "I have been thinking that we should have some sort of a class gathering here locally (Bill is at 10 East 40th Street, New York) but have been rather involved these last three months. I have made three trips to El Paso and Houston on business and on one trip in November went to Old Mexico for 10 days and had some excellent deer shooting. Lately I returned from a short trip, during which I took off enough time to stop in West Texas to kill a fine, fat gobbler. I had no duck shooting at all this year. Besides my usual real estate activities, I am having much fun with a large natural gas pipeline development from New Mexico and West Texas to southern California."

Bill enclosed with his letter a copy of Dick Berger's brochure on *Cancer — Probable Causes and Prevention*. Dick has worked as a research chemist and experimenter for the late Thomas A. Edison and the Columbia Phonograph Company, and for the past 15 years he has spent considerable time in cancer research in his home laboratory at Bridgeport, Conn. He has published articles in *Mechanix Illustrated* and *Consumers' Digest*. Dick's article is "to stimulate thought and concerted action to overcome this obnoxious killer." His belief is "that the incidence of practically all cancer is due primarily to the cumulative effect during lifetime of contact with various carcinogens — not just one cancer-causing irritant but the sum total of all — which result from the incomplete burning of coals, manufactured gases, oils, woods, tobaccos, and other combustibles which are breathed into the human system, eaten with our food, and deposited externally on exposed parts of the human body." Cancers found internally are classified as "internal tar cancers" caused by accumulated irritants of the tar family composition. It is Dick's conviction that publicity of the facts known about carcinogenic irritants will eventually bring about the prevention of cancer. It is a noble endeavor which he has undertaken, and we should not only congratulate and encourage him in his work but also bring this pamphlet to the attention of others.

A March 10th letter from Wes Blank gives this data: "It had been my intention to be present at the reunion, but I could not on account of business. I have now left the government agency work and am connected with the Byrne Organization at 2607 Connecticut Avenue, Washington, as their chief engineer. This company was quite prominent in war work as one of the eight chief engineering contractors in the construction of the Pacific naval air bases. They are now actively engaged in very extensive veteran housing projects running into many million dollars. My home is in Chevy Chase, and the correct address is 4705 Drummond Avenue. My family consists of a daughter, now at Sullins College, and my son, at Norwich University in Vermont. My son is married to a girl from Lowell. I hope to be up in New England this summer, and if possible will drop in."

Dick Rowlett of the Brown Bridge Mills, Inc., of Troy, Ohio, writes as follows: "I am sorry to be so remiss about answering your request for up-to-date news on me and mine. The fact is, I've been up to my neck in plans for getting one of my daughters married. It's no joke, son. To begin with, I was invited back into the Army in 1942 and held down the soft (?) job of executive and control officer at the Springfield Armory. They called me major then, but I got over it. I was separated from the service in August, 1945, and came out here as sales manager of this outfit.

"If you have never been out here, you should see this neck of the woods before you die. It is really pretty fine country, although my wife does not agree. She is enough of a Yankee to miss the rocky hills and streams of good old New England. So do I for that matter. I miss the opportunity to get to good trout water in an hour or so. Out here there is no fishing, although the crowd I'm associated with seem to spend most of their time down in the Gulf, Bimini, and such places, when they aren't out in the Dakotas or in Canada. However, a job is a job, particularly when it is a good one.

"The housing situation is really tough. We are living in a furnished rented house temporarily. Anything offered for sale is unduly high-priced, and building is not for me yet. As far as my family is concerned, I have three offspring. My son, Tom, got his wings as a pursuit pilot but did not get overseas. He got out of the service in October, 1945, and came out to Miami University in Oxford, Ohio. He's 21 and finishing his sophomore year. Incidentally, he is pledged Delt, as his old man was. Miami is a good little college and in a beautiful, typically college, town. My daughter Caroline is 19 and was a sophomore at Wheelock in Boston but met her fate out here last summer, and after a terrific struggle, I lost, and she is to be married in Springfield, Mass., on April 3. We'll all be over there for the event, although as I shall be at the paper convention in New York the several days before, I may be more or less non compos. My daughter Jane, 15, is a sophomore in high school here, and judging by the looks of things, I may have trouble keeping her out of some young man's clutches much longer, as she slays them.

"I have such fond memories of the 25th reunion that I was sorry to miss the 30th,

but being somewhat new out here and having just brought my family out, I could not well get away. I hope to make the next one — the 35th, or any that comes along in the meantime. I hope you'll excuse my typing, but my writing is worse; my secretary is out with the 'flu,' and I am catching up on some personal chores. This is one I really enjoy, although I'd rather be sitting with you in some quiet spot, nibbling on a bottle of good Old Fitzgerald or Old Harvester, or some other good bourbon. Since I came out here into the 'deep South,' I have foresworn Scotch and drink bourbon and 'branch water.' Brother, can they lap it up out here! It's rugged going for an effete Easterner, but I'll make it."

We engineers have often undertaken reconstruction jobs, but the reconstruction of the four books of the New Testament was left for Rusty White. A recent clipping from a Boston paper is headlined, "Boston Engineer Compiles One Composite Gospel." The article continues thus: "A Boston engineer, whose hobby is Bible reading, reported today that he had streamlined into a single, chronological composite, the story of Jesus as told in the four Gospels, eliminating repetition. Russell Hubbard White published at his own expense 'the combined Gospels of Matthew, Mark, Luke and John,' which he described as 'one composite gospel presenting the complete life of Jesus as contained in the gospels of the authorized King James version.'" The article gives a résumé of Rusty's reasons for undertaking this project, one of which was the difficulty he had in reading the New Testament, which he said was "repetitious — the same thing over and over."

"The verses are still word for word as they appear in the Holy Scripture," he explains. "I simply cut duplicate material." The clipping goes on to say that Rusty is planning a coast-to-coast tour to acquaint church groups and dealers with his book. At the present time he is rearranging the entire Bible under six subject headings — history, statistics, law, doctrine, prayer, and predictions. The complete Bible index is not expected to be finished until 1949. His ambition is to make this best seller "the best-read book." We've been expecting to hear from Rusty with some inside information on his prospective trip, but to date the itinerary has not been forthcoming. I have my gold-embossed copy of his Bible and find that this first edition makes a nice addition to one's library.

A prompt reply from Jack Burbank (the same day, *mirabile dictu*) informs us that "the general picture shows that my oldest boy, James C. Burbank, entered the Army as a volunteer from college. He came out as a private, having served during the European campaigns and the occupation of Germany until March, 1946, when he was discharged under the point system. He is now in Portland, Maine, principally engaged in the development of a bottling business for a beverage known as 'Squirt,' for which his little company has the franchise for Cumberland and York counties. They actually began operations during the month of February this year, and it looks as if the undertaking would be a success. He is 24 years old. I have a daughter, 27, who is living at home with two children while her husband works in Boston and

tries to find a place for them to live, which, as you know, is quite a problem these days, especially when children are involved. The youngest member of the family, John, who is just 18, is in his final year at Middlesex School, Concord, Mass. He has some hope of entering Dartmouth College this fall, but with admissions extremely rigid the prospect is not too encouraging. As for me, I am still doing business at the old stand — the Travelers Insurance Company. George Petit of our Class is associated with me in the engineering and inspection division of the Travelers. He lives at 18 Greenhurst Road, West Hartford, Conn. My home address is 20 Walbridge Road, West Hartford, where the latchstring is out for any classmate who may be passing through. This summer I shall spend a good part of my time at Blandford, Mass., a little town just 12 miles west of Westfield, Mass., which has the distinguishing feature of being 1,600 feet above sea level. Anyone driving through would certainly find a welcome. For identification, I shall be in one of Mr. Ripley's cottages."

Walter Littlefield forwards a welcome note, "Apparently it takes an 'Electrical' to spark the 1916 class notes. Pardon the atrocious pun, and accept my congratulations. I'm sorry I can provide no news. Real estate, motion picture theaters (by remote control), and security management keep me out of mischief and in a rut. Extra-curricular Roxbury Latin, a home for aged ladies, and old man's golf account for all spare time. If any reader of *The Review* wishes to learn of an admirable way to reduce income taxes, my speech begins, 'The Roxbury Latin School is starting on its fourth century.'"

Paul Duff, M.D., so good at ministering to the needs of others, comes forward with this encouraging report: "You were very persuasive, but I feel that I and my life make very poor subjects for notes. In my idyllic surroundings, my bucolic existence is quietly spent in my two jobs of taking care of the sick and beating the daylight out of my 10 children. There is little time for anything else. My good health and girth are continually increasing. I hope yours are the same."

From the board of directors of the Metropolitan Life Insurance Company comes an announcement of the appointment of William J. Barrett, formerly assistant vice-president in charge of the policyholders' service bureau of the group division, to be third vice-president. Mr. Barrett, says the announcement, will continue to have supervision over that bureau and in addition will have supervision over the publication division. A note from the newly elected vice-president reads as follows: "It was good to hear from you. I have to bring you up to date on my address, which is 19 Wakeman Road, Darien. I have seen a great many individuals in conjunction with the work as honorary secretary. This has been quite enjoyable. I had a very pleasant visit at the Institute recently with two of these young men and their fathers. I was very much impressed with the fine public relations aspects of the Institute. I commend such a visit to all."

We have but one issue left, and we should like to make it the best of the season. A little from each of you who have not yet been mentioned would make it that.

Surely, you have something to say! Send it along. — RALPH A. FLETCHER, *Secretary*, Post Office Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York 14, N.Y.

1918

"Beating the bushes" is an expression which probably stems from an attempt to flush game where the co-operation of a bird dog is not available. Be that as it may, we had to beat the bushes for news this month and came up with two items.

The Framingham, Mass., *News* says that Brigadier General C. F. Bowen has announced the appointment of Colonel Ola A. Nelson of Natick, Mass., as executive officer of ground force instructors for the New Hampshire National Guard. The paper goes on to say that Nelson is a graduate of M.I.T., of Norwich University, and that he served in World War II as commander of the 24th Army Anti-aircraft group with the Third Army in Europe.

The other item has to do with the elevation of John R. Markham to the rank of full professor, recognition which many of us feel he has deserved for a long time. — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

1919

Many of the Class have brought to the attention of your Secretary preliminary suggestions for the 30-year reunion which will be in June, 1949, or about two years hence. Your Secretary would appreciate receiving more ideas and suggestions for this reunion. By making our plans early, we should be able to increase our attendance and arrange a more enjoyable gathering of the Class.

Ed Moody writes from Jungle Barracks, Hollis, N.H., as follows: "As business has taken almost everyone's time, clean up to the hilt, for the past year or so, I am able to report that I have seen or heard from only two 1919 men in the last 12 months. Bob Hackett came back to Hollis on 'Welcome Home Day,' and I saw him on the town common for a few minutes. I have chatted with Holley Winkfield many times on the telephone, trying unsuccessfully to buy a few motors from him. So about all I can report on is the happenings of my 30th year: Our daughter was graduated from Stratford College, Danville, Va., and enters the University of New Hampshire; our son re-enlisted in the Navy for another two-year hitch; we celebrated our Silver Wedding anniversary; I did not take in the National Shriner's convention at Los Angeles; I did not win, or even score, in the tournament at the Nashua Country Club; we spend all our leisure time in New Hampshire; I drew door prize at the Society of Automotive Engineers outing; we sold our home in Lynn and bought one in Arlington, Mass. That's all. P.S. If you ever get to New Hampshire in the summer, drop in."

Joe Newell, giving the news about '19 men in and around the Institute, writes as follows: "I believe I hold the class championship in being shot all to health with penicillin, but I'm willing to pass the honors along to anyone having more than

25 x 10⁶ units injected into his carcass in more than 504 shots. We won't discuss the area of inoculation, but the target was pretty well localized in the only muscular area of adequate volume after I had lost about 30 pounds. When the treatment was completed, they advised me to 'go home, sit around, and take it easy.' I'm still taking things easy and am feeling fine. I have no classes this term but am keeping occupied as executive officer in the Aeronautical Engineering Department and as secretary of the Faculty. If I can keep clear of *Strep viridans*, and I should if my present feeling of good health means anything, I'll get back to work before I get too fat and lazy. Jim Holt is running the budget for the aeronautical and mechanical departments; so I see him occasionally. He appears to keep in good health as do Svenson, Mirabelli, and some of the other '19 men around these parts."

Harold F. Marshall of Palmyra, N.J., dropped us the following note: "There is no news to report except my promotion to the rank of lieutenant colonel in the Reserve last October (not on active duty) and my promotion to grandfather last July — of one granddaughter." S. J. Hayes writes, "Nothing special to report. A little more waistline, a little less hair." William R. Osgood writes from Washington, D.C., as follows: "Since last June I have been a structural consultant in the structural mechanics division of the David Taylor Model Basin of the United States Navy. I returned from a three months' mission in Europe two months ago and am starting on a three weeks' trip to the West. Join the Navy and see the world!"

A card received from Mason S. Noyes, in Cincinnati, reads as follows: "There's only one way to do it surely — that's to do it *now*! I am at present called a research engineer in the research and development department of Tube Turns, Inc., at Louisville, Ky. I am still living in Cincinnati and room in Louisville during the week. As a result, American Airlines has dubbed me an 'air commuter,' for I travel back to Cincinnati with them each Friday. I get a kick out of each trip! So far, I have not run into any Tech men in Louisville. Since the bunch in Cincinnati meet every once in 'so seldom,' contacts there also are few." W. C. Patterson (Archie Tech) has lately brought out an anthology of poetry under the title *Tribute to Triumph*, published by the Exposition Press at 1 Spruce Street, New York. Izzy Patterson sent his best regards. Edward E. Saunders has been promoted from the rank of commander to that of captain.

Aubrey P. Ames's new address is Apartment 401, 1860 Jackson Street, San Francisco, Calif. Daniel H. Brown has moved from Lawrence, Mass., to 191 Bank Street, Lebanon, N.H. Huron Corthell's address is 14 Walnut Avenue, Mill Valley, Calif. Edmund J. Flynn resides at 1033 Fourth Street, Palmerton, Pa. Major General Edmund W. Hill is now at Belgrade Lakes, Maine. Gustave Levy has moved from South Orange to 21 Wellesley Road, Maplewood, N.J. — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York 17, N.Y. ALAN G. RICHARDS, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

1921

It's only a month to Alumni Day on June 14. The Class will meet at the Statler during the afternoon.

John J. Winn, Jr., has been in Honolulu for more than a year as the vice-president and general manager of the Honolulu Gas Company Limited. Jack, who writes that he frequently sees Harry Field at Rotary Club meetings, becomes the fourth of the Honolulu contingent, which also includes Fred Kingman of the Civilian Production Administration and King-Chau Mui, the Chinese Consul General. Before the war, Jack was the commercial manager of the Portland Gas and Coke Company, and in 1942 he joined the Corps of Engineers with the rank of major and served as contracting officer for the construction program in the Northwest. He saw action in the European theater as a lieutenant colonel and acting chief of the supply division, winning the Bronze Star. Hospitalized, he lost some 75 pounds and was returned to this country with an assignment to the Office of the Chief of Engineers in Washington, until he resumed civilian status in October, 1945. Back in Oregon, he was associated with the First National Bank of Portland as industrial analyst until his move to Hawaii.

George A. Chutter, the first of our new secretarial committee to report for these columns, writes as follows: "I recently arrived in New Haven just in time to congratulate A. Royal Wood, Treasurer of the United Illuminating Company, on being a father for the fourth time. Sons George and Jonathan are respectively ten and five years old, and Cynthia is eight. I had lunch with Ted Rose in Waterbury, which is always an interesting event because he has so many novel ideas resulting from his varied contacts as a consulting engineer. I attended a meeting of the Technology Club of Philadelphia as the guest of Ralph M. Shaw, Jr., President of the Pedrick Tool and Machine Company, and spent the night at his beautiful home in Beverly, N.J. Ralph and Madeline have a charming 15-year old daughter, Mary. I ran into Ralph Gilbert in New York, where he handles underground plant engineering for the New York Telephone Company. Gilly has a son who promises to make good engineering material and a daughter who will doubtless some day be interesting to engineers." Thanks, George. We are grateful for your help and hope the fine example will urge all those to whom we have painstakingly written cards and letters these many years to come forth with replies. For the record, George has added star reporting to his notable achievements in purveying the best in high-temperature furnace equipment from his own business, with offices at 30 Journal Square, Jersey City, N.J.

Sumner Hayward is another of the early secretarial committee reporters on the job with the observation that his Ridgewood, N.J., neighbors, Mal and Connie Nelson Lees and son, Ned, went on a skiing trip to the Berkshires while he toiled with transmission studies at the Brooklyn office of the New York Telephone Company. Ed Farrand, our Chicago reporter and general manager of the United Conveyor Corporation, is on the West Coast in

search of news, which he promises to present in person on Alumni Day.

Walter E. Church, secretarial committee-man and member of the architectural firm of Whitehouse, Church, Newberry and Roehr of Portland, Ore., says, in a prompt reply to our request, that Jack Winn is missed from local circles. Walt adds the following: "A. Glenn Stanton is now serving as president of the Portland city planning commission. At the annual meeting of the Oregon chapter of the American Institute of Architects, Walter E. Church was elected president and Irving G. Smith made vice-president for the ensuing year." Thanks a million, Walt, for keeping us posted on Course IV.

Reporting from the national capital, Larry Conant says he has been visiting Army headquarters around the country and has missed recent local gatherings. Of his own activities in the Office of the Chief of Engineers, Larry says: "We have been snowed under initiating a supervisory development program for all post engineer personnel in each of the six armies in this country. One aspect of this program is the human engineering which it injects into the post engineer's approach to his job. On the home front, I have organized a group of dads in the neighborhood into a club for our small sons. I should be glad to send an outline of the program to any who are interested, but I warn them it's a bit rough on the dads." Larry's address is 3063 Ordway Street, North West, Washington 8, D.C.

For the Twin Cities, Winter Dean of Nicols, Dean and Gregg, in St. Paul, reports that he often sees Ivan C. Lawrence, who is director of personnel of the Minnesota Mining and Manufacturing Company. Ivan has three grown-up daughters, ranging in age from 17 to 23. Miles M. Zoller, Vice-president of Eagle-Picher Sales Company and Cincinnati news-gatherer, says that Lewis W. Moss, previously reported out of the Army and located in Chicago, is back with the New York Central Railroad on a new assignment.

Indianapolis is represented by Elliott G. Peabody, who says he was sorry to miss our 25th reunion and adds the following: "I was busy trying to settle my family and recoup my fortune after a three-and-a-half-year trick with Military Science. I have returned to the Citizens Gas and Coke Utility as sales manager and am now a full-fledged member of the Gas House Gang. While absent from a session of the Indiana Association of the M.I.T. last year, I was elected president, so let that be a warning to anyone not to miss an alumni meeting."

We wish we had the space to run the entire description of his territory of Colorado, Wyoming, and New Mexico which is vividly portrayed in a letter from Dana E. Kepner, hydraulic and sanitary engineer of Denver. From the appropriate address of 1921 Blake Street, Kep writes as follows: "Since 1933, I have been plugging away as a manufacturer's representative, handling water works, sewerage equipment and supplies. During past years, I started the Rocky Mountain section of the American Water Works Association and the Rocky Mountain Sewage Works Association, served as secretary, vice-president, and president of each, and am still helping to

run the show for both organizations. I have been vice-president, president, and a director of the Colorado Society of Engineers; secretary, vice-president, and president of the Colorado Engineering Council; chairman of the national committee on juniors of the American Society of Civil Engineers; and honorary director of the Denver Chamber of Commerce.

"My hobby is photography, and lately I have gone into color work rather deeply. I have a portrait studio in my office building and two excellent darkrooms for everything from black and white to color films and color prints. I am a member of the Denver Photographic Society, the Photographic Society of America, the Royal Photographic Society of Great Britain, serving as president of the Denver section, and as chairman of the salon committee, of the Denver Council of Camera Clubs.

"My family includes my Boston girl friend, who is now Mrs. Kepner, our daughter, Barbara, who is in her junior year at Colorado College, and son, Harrison, who is a junior in high school. Although I am kept busy, I shall always have time to visit with any of the fellows who come through Denver."

From St. Louis, the director of purchases of the Lambert Pharmacal Company, Herbert C. DeStaebler, sends this news: "Mrs. Alice Bronfenbrenner joined the Lambert force during the war and contributed materially toward our winning five Army-Navy E's. Her present outstanding activities center around our work on the newer antibiotics. Gene Weil is still vice-president of G. S. Robins and Company here in St. Louis." Herb says his oldest boy, Herb, Jr., is doing a top-notch job as a freshman at the Institute.

Speaking of sons of members of the Class now at Technology, our editorial apologies go to Freddie Adams and Bill Loesch for failure to include in last month's list the names of Frederick W. Adams, Jr., and Robert C. Loesch.

Mr. and Mrs. Henry R. Kurth have announced the marriage of their daughter, Anita, to Laddie Lee Wiechman on March 16 in Cambridge. Chick, who is the new assistant superintendent of the production department of the Boston Edison and our class representative on the Alumni Council, really went to town and shipped us considerable data on local happenings. Jack Rule, head of the Section of Graphics at Technology, is receiving congratulations on having been elevated from the grade of associate professor to professor. As chairman of the Committee on Assemblies, Jack is also given the credit for putting on an elaborate television show at the midwinter alumni meeting in Walker. Edwin T. Steffian, Boston architect, has changed his class affiliation and is duly welcomed to our midst. Dugald C. Jackson, Jr., has hung out his shingle as a consulting engineer in Boston. Murray Jones is power sales manager of the Boston Edison, and Henry Lane is the New England representative for various electronic devices such as wire recorders and platter devices used by broadcasters. Al Edson is the head of the Bedford Airport. Among those present at the February Alumni Council meeting were: Mel Jenney, Harry Rosenfield, Murray Jones, Harry Goodman, Jack Rule, Harty Flemming, Chick Kurth, Josh

Crosby, Elly Adams, Fred Binns, Ed Dube, Fritz Ferdinand, Bob Haskel, Dugie Jackson, Joe Kaufman, Herb Reinhard, Steve Seampos, Charlie Thornton, and Scripps Booth. Chick's older boy, Malcolm, is a sophomore at the Institute, picking up where he left off when he entered the service. The younger boy, Don, has also returned from service and is taking a refresher course at Huntington School. Daughter Barbara is finishing high school and plans to enter Simmons for a course in nursing.

Edmund S. Whitman, advertising manager of the United Fruit Company with headquarters in New York, has also been given charge of the company's publicity and information services.

Augustus B. Kinzel, chairman of the board of the Engineering Foundation and vice-president of the Union Carbide and Carbon research laboratories, is in the limelight for his warning that industry faces an early shortage of trained personnel for industrial and scientific research as a result of a vast expansion of research by industry in recent years.

Bob Neyland, Tennessee football coach and former brigadier general, was accorded recognition by the nationally syndicated "Their Birthdays" column on February 17. Bob's address is in care of the Athletic Association, Knoxville, Tenn.

New addresses for incorporation in your class directory are the following: Dr. John Campbell, XIV, 702 Buffalo Avenue, Niagara Falls, N.Y.; Paul L. Hanson, II, Northwest Kold-Draft Company, 1647 Hennepin Avenue, Minneapolis 3, Minn.; Jackson W. Kendall, XV, Bekins Van Lines Company, Post Office Box 2609, Salt Lake City 14, Utah; Colonel Lester F. Rhodes, I, 1116 O Street, Sacramento, Calif.

Our worthy Class President, Ray St. Laurent, breezed through town as we put these notes to bed, and we completed arrangements for the class meeting at the Statler Hotel during the afternoon of Alumni Day. Movies and stills of last year's reunion will be on hand; if you have some that you haven't previously sent in, bring them along, or, preferably, send them to us now for inclusion in the show. Look up your Secretary at the hotel on Friday evening, June 13, or during the day Saturday for last minute details. — CAROLE A. CLARKE, *Secretary*, International Standard Electric Corporation, 67 Broad Street, New York 4, N.Y.

1923

About 13 months from now, the Class of 1923 will become the 25-year class of the Institute. At the 25- and 50-year milestones, the Institute officials and Alumni make a small fuss over the classes that attain these distinctive ages; be ready, therefore, to take what bows appear to be in order. I've begun a series of mailings to members of the Class about the 25th reunion and celebration. The one dated March 15 deals with class dues to provide the wherewithal to initiate reunion plans. In order to be sure to get subsequent mailings about the reunion, send in your dues, and you'll be kept posted. The business of reporting about yourself, mentioned in that same letter, is important, too. A fair number have been doing a good job of letting me

have items of interest, as shown by these notes, which were written before the returns from the letter were received.

Walter T. Rolfe, chairman of the architectural department at the University of Texas, has resigned to join Albert S. Golemon '25 in a new architectural firm, Golemon and Rolfe, with offices at Houston and Beaumont, Texas. Rolfe, winner of several national design competitions, was head of the department of architecture at North Dakota Agricultural College before coming to the University of Texas in 1928. He is vice-president of the Association of Collegiate Schools of Architecture.

The Boston *Post*, on February 26, devoted the best part of four columns to Richard L. Bowditch, president of C. H. Sprague and Son and the Sprague Steamship Company, Boston firms. It traced his career from work in West Virginia mines after leaving Technology, through sales work on coal in carload lots for C. H. Sprague and Son until he later became sales manager and president of the company. He is a term member of the M.I.T. Corporation and chairman of the Maritime Association of the Boston Chamber of Commerce. I mentioned his election as president of the New England Council in the February notes this year. He is married and lives in Cambridge.

P. Y. Tang has been heard from in the form of a generous contribution to the Class of 1923 twenty-five-year fund. I was happy to be able to assure him that his many friends at Technology will be glad to hear this word of him after the years of the war during which little information was available about many members of the Class in parts of the world cut off from communication with this country.

H. H. Zornig reports that he has retired from the Army and is on the staff of the research laboratory of the General Electric Company and is located at Richland, Wash., with the Hanford Division. As to this change, he writes as follows: "At the time of the armistice with Germany (V-E), I was assistant chief of staff, G-2, in charge of technical intelligence in the European theater of operations. When the Supreme Headquarters of the Allied Expeditionary Forces broke up at the end of June, 1945, I joined the Field Information Agency (Technical) of the United States Military Government for Germany. This assignment lasted until October, 1945, when I was sent back to the States 'sick in hospital.' I had a rather rough time at Walter Reed Hospital until the spring of 1946, when I was retired for physical disability. Thus ended nearly 37 years in this man's Army, 30 of them in the Ordnance Department and 10 at Watertown Arsenal."

An idea of the interesting kinds of work that some of the men in the Class get into is given in the following extracts from a letter written to me by A. G. Thomas, in response to my inquiry about a change of address: "I was associated with companies controlled by my family until 1932, when I organized a research corporation which is still in existence. I worked for a large airplane company for about a year (1940-1941) and developed for them a photographic or developing process very similar to the one recently announced from Cambridge. This company apparently did not pursue the matter further. During the

remainder of the time, I was patent engineer for the company. I then went to Connecticut and developed a device to analyze metals by their contact potentials or electrolytic potentials. A device of this kind is now on the market. After leaving Connecticut in 1942, I was with Division Four of the Office of Scientific Research and Development for two years. This division was at the National Bureau of Standards and developed one of the two forms of the proximity fuse. I had charge of all patent work for this division.

"Since leaving Washington, I have been doing research and patent work for Controls Laboratories, Inc., of Worcester. I have about 35 issued patents and have filed patent applications for about 1,000 inventions. In 1939, I filed an application which included the method of dissipating fog over airports by heating the air. Published accounts have stated that this is a British invention, but I rather think I may have anticipated them. During the war, I suggested to the National Inventors Council the following devices: (1) sonar buoy, which received underwater sounds from submarines and broadcast them by radio. (2) The magnetic finger, for detecting submerged submarines. (3) The reaction bomb, which dropped vertically when released from a plane. The latter three suggestions may, however, have been first suggested by others. Here at Controls Laboratories, we have recently demonstrated a three-dimensional automatic control for machine tools. This control makes it possible to cut metal to any shape whatever, entirely automatically. It is very accurate and would seem to open up rather large possibilities in the machine tool field and automatic operations generally."

H. C. Sexton, a captain in the Navy, wrote me in March that on April 1 he was to be transferred from duty in the Bureau of Ships in Washington, where he has been director of research, to duty as commanding officer of the Charleston Naval Shipyard, Naval Base, S.C. — A clipping from the *Star-Journal* of Long Island City, N.Y., of November 25, tells of the election of Herbert N. Leisk as president of the Greater New York chapter of the Society of Residential Appraisers. Leisk has been in the real-estate business in Flushing since 1939. He lives with his wife and daughter Betsy at 149-45 Hollywood Avenue.

Lester B. Bridaham writes as follows: "After three years in the Navy, I returned to the Art Institute of Chicago in November, 1945, as secretary to the board of trustees. My daughter, Vivian Burbank Bridaham, was born on last September 8. At present, I am working on a book on the American artist, Julio de Diego, which I expect to publish next year." — Speaking of books, D. G. Brinton Thompson reports that Columbia University Press a few months ago published a book of his, *Ruggles of New York*. Thompson has a Ph.D. degree from the graduate school at Columbia. He taught for a while at Lafayette College and is now assistant professor of history at Trinity College in Hartford. — HORATIO L. BOND, *Secretary*, 457 Washington Street, Braintree 84, Mass. HOWARD F. RUSSELL, *Assistant Secretary*, Improved Risk Mutuals, 60 John Street, New York 7, N.Y.

Remember the Date—Saturday, June 14—Annual Alumni Day Celebration

George Parker evidently has been doing a good deal of thinking about plans for our big reunion in 1949. He writes as follows: "It has taken a considerable time to get going on the class reunion gift for our 25th gathering. However, the pressure of business has eased sufficiently to let me have real hope of giving it the attention it deserves. Cy Duevel and I had planned a meeting on this subject in Worcester, two weeks ago. Unfortunately, Cy's father was struck down by an automobile a few days before our date, and Cy left hurriedly for Tacoma. I have not heard from him since, but imagine he will get in touch with me upon his return East.

"Could you devote a section of the 1924 notes in the next issue of *The Review* as a forewarning to our classmates of the pattern of things to come. Briefly stated, the letters of solicitation will be directed to five different groups in as many manners: (1) A word of encouragement to the relatively few classmates who have maintained their insurance policies with all premiums paid. (2) A different letter to those who have paid most of their premiums but skipped a few. In these instances the Institute has paid the premium and should be reimbursed. These men will also be urged to pay the remaining premiums between now and 1949. (3) A series of letters to those who let their policies lapse some years ago — far enough back so that the Institute did not see fit to pay the premiums. In these instances there was a cash surrender value on the policy, which will accrue to the gift fund. These men will be urged to make a cash donation of \$10 for each year from the time the policy lapsed until 1949. (4) A different series of letters to those class members who would not take out an insurance policy. In these instances, our classmates will be urged to make a flat donation of \$250. (5) Separate solicitation of classmates who are known to be in the preferred position of being able to make more than the usual gift."

Bill Robinson, who will soon get a medal as a regular contributor to this column, forwards this news: "It was a pleasant surprise for me the other night when I met Dick Rhea. I was waiting for a late train back to Cleveland from Schenectady when Dick came into the Mohawk Club. It had been more than 20 years since we had seen one another, and it was a most pleasant reunion. Dick is the engineer in charge of the chemical and petroleum application division for the apparatus department in Schenectady. On one of my recent trips to New York, I waved to Carl Vicario while we were riding the same elevator in the Graybar Building. I found that he is located on the 24th floor. The greeting was short, but we are going to get together soon. Henry Simonds telephoned me at home one night a few weeks ago. He is a chief engineer aboard a round-the-world freighter, and his call was from Jersey City. He was heading for his home port, San Francisco, via the Panama Canal. Sometime when we are feeling that our jobs are particularly tough, think of Henry, away from home during the greater part of a year, afloat in a freighter."

And Chick Kane comes through again with these tidings: "Three classmates have

dropped in recently to say hello. Andy Kellogg, taking a breather from his job of running Schenectady's leading newspaper, looked as hale and hearty as he did during the war, when the Navy had him busy in action in the Battle of Park Square Building. With one of his colleagues, Willard van Allen was at the Institute for a short while on an ivory hunt, looking for bright young nuclear physicists who would like to work for the government. Willard is a physicist in the radiology section of the United States Public Health Service in Washington, D.C. He was having tough sledding. It seems that the nuclear boys really have the world by the tail, and they laughed at the modest salaries the government was prepared to pay.

"A few weeks ago, there was a very hush-hush conference going on at the Institute with more brass than has been assembled since the signing of the Japanese surrender. Among the civilian brass was Ted Kenyon, who is now a research consultant with his own organization, the K.M.G. Research Corporation. Ted's been doing a lot of work on servos, gyros, and other such simple gadgers.

"Some of us may not realize how many '24 men there are on the staff at M.I.T. A hasty check shows the following: Tom Sherwood, who was a Course X graduate student, Dean of Engineering; Harold Hazen, head of the Department of Electrical Engineering; Otto Koppen, Professor of Aeronautical Engineering; Ed Taylor, Professor of Aeronautical Engineering; Hoyt Hottel, Professor of Fuel Engineering; Avery Morton, Professor of Chemistry; Mart Buerger, Professor of Geology; Jay Stratton, Professor of Physics; Charlie Blake (officially listed as '25 but he's really a '24 man), Associate Professor of Biology; Avery Ashdown, Associate Professor of Chemistry; Alex Bone, Associate Professor of Civil Engineering; Jayson Balsbaugh, Associate Professor of Electrical Engineering; and Chick Kane, Director of the Alumni Fund. Quite a line-up for one class!" With such a group of correspondents, the Secretary's life is a pleasant one again. Let's keep it up.

On March 5, the Technology Club of New York held a spring dinner in honor of H. E. Lobdell '17, our new Vice-president in charge of alumni activities. About 100 Alumni attended, seven per cent of whom were 1924 men. Not many in quantity, but perhaps the quality of those who came will in part offset the relatively small number. Bill Keplinger, Hank Zeiger, Ray Hamilton, Greg Shea, Ed Wininger, Nat Schooler, and your Assistant Secretary put their best foot forward to uphold the traditions of the Class. In many respects, it is unfortunate that more of our class members could not share this occasion, for in addition to the most interesting information which Lobbie had to give us, there are many reasons why 1924 should have more adequate representation at any Technology affair at this time of year. To begin with, we have a 25-year reunion not very far off, and secondly, we have the personnel in the vicinity to pitch in and make a real contribution in the operation of the New York Club. There will be another affair coming along in the near future, however, and I truly hope for a much better numerical showing.

Some three months ago, your Assistant Secretary wrote to a handful of those whom he considered live-wire members of the Class, asking them to help us make this column a more lively news section. To date, only Rock Hereford has taken his pen, or typewriter, in hand and come across with any news whatsoever. Fred Hungerford must have become suffocated in the soda ash pile, Johnnie Fitch lost in statistics, Doug Elliott electrocuted in the deep South, and what might not have happened to one Harry Estill? Were I to draw upon my imagination about the latter, I might find him down behind the barn, with a shovel in one hand and a pitchfork in the other.

A Christmas card from Nish Cornish, in Mexico, arrived in good time for Easter. Nish and I just missed seeing each other a while back, when he was in the States. Frank Manley of the Rockland Light and Power is having his troubles, producing enough kilowatts to keep people warm and comfortable, and Anatole Gruehr is the usual busy engineer here in town with the Consolidated Edison Company. I have tried to catch Bill MacCallum in his office on two occasions but had no luck. We reported last month the sudden passing of Henry Shore, but have received a call or two since then asking for more details. June 14 is to be the Alumni Day in Boston, and here's hoping we shall be there in notable numbers. More details of class plans will be announced later. — FRANCIS A. BARRETT, *General Secretary*, 234 Washington Street, Providence, R.I. WILLIAM W. QUARLES, *Assistant Secretary*, Hollow Tree Ridge Road, Darien, Conn.

1925

Herewith is an accumulation of two months' letters and clippings. The first item refers back to the February issue, wherein we reported the death of Leland R. van Wert, V. This letter was received from P. H. Dike, assistant director of research of Leeds and Northrup: "I have recently received from Mr. Cohn, of our Chicago office, a clipping from *The Review*, in which you ask for information on Dr. van Wert. I am enclosing a clipping which gives the outstanding details of his career. It makes no mention of his connection with M.I.T. At the Leeds and Northrup Company he was in charge of our research work in metallurgy, principally in the nonferrous field. He studied corrosion of thermocouple materials at high temperatures, stress corrosion, methods of acceleration of diffusion of carbon into metal surfaces, and so on. Never in rugged health, he developed a heart ailment about two years before his death, which permitted only a very limited amount of activity and kept him confined to his room for months at a time. . . . Dr. van Wert was respected and liked by all his associates, both for his personal characteristics and his scientific attainments, and his death was a real loss to our company." The "Mr. Cohn" referred to above appears to be Nathan Cohn '27, XIV, and I hereby express the thanks of the Class and the Secretary to him as well as to Mr. Dike, for their respective parts in sending this information to us.

Significant parts of the clipping from the *New York Times* of March 28, 1945, follow:

"Dr. Leland Russell van Wert . . . died . . . at the Pennsylvania Hospital after a long illness. Born in Raymertown, N.Y., he was son of the late Arthur E. and Addie Williams van Wert. After being graduated from Union College in 1915, [he] became a physical metallurgist with the Dorr Company and metallurgical engineer with the Remington Arms Company. In 1920 he became instructor in metallurgy at Harvard University, where he was associated with the eminent metallurgist, Dr. Albert Sauveur, to whom he dedicated a text 'An Introduction to Physical Metallurgy,' in 1936. Dr. van Wert became assistant Professor of Metallurgy at Carnegie Institute of Technology in 1926, and received the degree of M.S. there in 1929. In 1929 he returned to Harvard as Eveleth Scholar, and in 1930 received the degree of Sc.D. He was lecturer at Harvard until 1937 when he joined the Leeds and Northrup Co. as research engineer. He became chief of the metallurgical section in 1939 and retained that position until his health failed. He leaves a widow, the former Christine Megee of Shelton, Conn., whom he married in 1921; a brother, Harold L., of Philadelphia, and a sister, Martha of Westfield, N.J."

The Boston *Globe* of November 29 carries an item to the effect that the previously unknown grave of Roger Parkinson, II, has been located in Holland by a friend of his mother, a Mrs. Jacobus Langendoen, of Newton Lower Falls, Mass., when she made a trip to Holland in connection with the work of the former American Relief for Holland organization. Roger, who was a lieutenant colonel in the 101st Airborne Division, was killed in action on September 26, 1944. Mrs. Langendoen, the wife of a cellist with the Boston Symphony Orchestra, spent considerable time and effort in this errand of mercy, and when she had found Roger's grave, laid a wreath there, and had a picture taken of the ceremony, which was published with the item in the *Globe*.

The Boston *Herald* of January 9 published the following item, in which the friends of Chet Trask, XV, will be interested: "Mrs. George B. Ludy of Cedar Rapids, Iowa, announces the engagement of her daughter, Miss Jane Ludy to Mr. Henry C. Trask of Medford, son of Mr. Howard H. Trask of Revere. Miss Ludy was graduated from the University of Illinois and received her master's degree at the Smith College School of Social Work. She was district secretary of the Family Society, Boston, and is now general Secretary of the Family Service Bureau of Newton. Mr. Trask, a graduate of the M.I.T., is a research assistant and graduate student in Social Relations at Harvard. He entered the Army in 1940, served from 1942-1944 as Chief of the Engineer Section of the American School Center in the United Kingdom and took part in the invasion of France, Belgium, Holland and Germany. He holds the rank of colonel."

The New York *Journal of Commerce* of January 21 contains the following notice: "The Home Insurance Company announces the following promotions in the Company's Massachusetts field: . . . L. P. Marsh has been promoted from associate state agent to state agent; . . . Mr. Marsh, who was born at Watch Hill, R.I.,

was a student at M.I.T. Following his graduation, he was employed by the Home as a special agent in the Boston office. He served in that capacity until 1942, when he was appointed associate state agent." Lynn was in Course IX-B. Our congratulations on this well-deserved promotion.

The Northampton, Mass., *Gazette* reports the appointment of Joe Hobbs to the Northampton State Hospital. The following is a complete quotation: "At the monthly meeting of the Northampton State Hospital trustees . . . [on February 3] . . . Dr. Joseph R. Hobbs of Williamsburg was appointed to the position of consultant in internal medicine. Dr. Hobbs' appointment follows upon the resignation of Dr. Justin E. Hayes, who served in that capacity during the past eight years. The new consultant returned recently from service in the army, where he had extensive experience both in health operations and in administration. Dr. Hobbs, who established residence in Williamsburg in 1933, is a native of Belmont and a graduate of M.I.T. He received his doctor of science degree in 1928, following work at Johns Hopkins school of hygiene, and received the degree of Doctor of Medicine from Harvard in 1932. He has been active in the Hampshire County Medical Society, is a member of the Dickinson Hospital medical staff and was examining physician for district draft board 57 in Easthampton from the Autumn of 1940 until being appointed a captain in the U. S. medical corps and advised to report to Washington, D.C., for active duty in April, 1943."

On February 25, Doc Foster sent the following letter for inclusion in these notes: "About 10 days ago, our Acoustics Research Laboratory was opened with a technical session and an inspection. Among the Navy representatives was Tom Killion, VI-A. You, of course, know that Tom was in Navy uniform all during the war, and I believe he ended as a full commander. He is now out of uniform but attached to the Office of Naval Research in a very important position. He is head of the scientific branch. I haven't yet been able to get the complete organization chart of the O.N.R., but one of the principal operating divisions is the planning division which is headed by the chief scientist of the O.N.R. Under this division are three branches, the scientific, medical and program branches. I think this will give you some idea of the importance of Tom's position in the picture. With the present research program of the Navy, the O.N.R. is going to be large and important, unless Congress decides that the government should go out of the research business. This is the only '25 man I have run across of late, but I hope I can give you some more news before too many more months elapse."

Only a few days later, on March 8, he sent the following: "I see in the 'Journal of the Engineering Societies of New England' that John J. O'Brien '25, VI, is listed as a speaker at one of the public utilities sessions of the 26th annual Massachusetts Safety Conference meetings scheduled for March 10 through 12. John is now assistant superintendent of the Narragansett Electric Company in Providence, R.I., and the paper he is to present is entitled 'Apprentice Linemen's Training Course as Con-

ducted by New England Power System Companies.'" — HOLLIS F. WARE, *General Secretary*, P. O. Box 52, Godfrey, Ill. F. LEROY FOSTER, *Assistant Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

1926

Classmates will be gratified to read the following letter from Eben Haskell, detailing the progress of the current campaign to bring our class endowment fund to \$100,000 by our 25th anniversary in 1951: "Since October 28, 1946, when our 20-year-old fund took on a new lease of life, until February 1, 1947, a total of approximately \$15,000 in cash and pledges was received from 77 members of the Class. This really has increased the stature of our fund considerably, raising it from \$25,000 to \$40,000, a 60-per-cent increase in four months. This total compares favorably with that of our immediate successors: Class of 1927 (\$22,000), Class of 1928 (\$43,500), and Class of 1929 (\$17,700).

"This is a good showing, and as chairman of the 1926 fund committee I want to take this opportunity to thank each and every one of the 77 members of the Class for his generous and enthusiastic support. Now that the fund has begun to grow again, however, it seems imperative for us to keep it growing so that it will reach full maturity by 1951. A 60-per-cent gain in four months is wonderful, but there is still \$60,000 to be raised. May I therefore take this opportunity to remind all members of the Class who for one reason or another have not yet responded that all they need to do is send their cash or pledge directly to D. L. Rhind, Bursar, indicating that it be credited to the 1926 fund.

"We are planning to divide the country on a regional basis with regional chairmen in order that a more direct and personal contact can be established between members of the Class. I should like to hear from anyone who would volunteer for the regional chairmanship of any of the following areas: southern California, northern California, Washington state, Southwestern Association area, Milwaukee, Tennessee, and the Louisiana-to-Florida area."

The Whitney Ashbridge family is now at 45 Woodale Road, Philadelphia, and Whit is with United Engineers and Constructors, Inc., in that city. A second son, John Paulding Ashbridge, was born on March 6. — In New York recently, while in an elevator at the Biltmore Hotel, your Secretary encountered, looming above all the others, Ray Mancha. Ray, as you will recall, is a vice-president of the Joy Manufacturing Company in Pittsburgh. — A recent caller at the Institute was Saul Brodsky, who has a large contracting business in New York, handling painting on housing projects.

Dick Whiting has left Chicago and is now living at 3523 South Utah Street, Arlington, Va. His business address is 227 National Press Building, Washington, D.C. — Edward Hope has returned to his professorial duties in the civil engineering department at Howard University, Washington, D.C., after service as a lieutenant commander in the Navy. One of his last assignments for the Navy was a talk at Alabama State College in the interest of the Navy officer training program.

Larry Cumming, another of our naval officers, has become technical secretary of

the Institute of Radio Engineers in New York. — Wilmot A. Danielson, now a full general, is in Raleigh, Tenn. — James Walker, who is manager of the transite pipe department of the Johns-Manville Corporation in New York City, is living in Mount Kisco, N. Y. — Henry Potter has a new business address: Plastic Enterprises, Inc., Bloomfield, N.J. — C. S. Canals has been transferred from Lima, Peru, to San Juan, Puerto Rico, by the Frederick Snare Corporation. — Morris Minsk is now residing at 3329 18th Street, Northwest, Washington, D.C. — JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

1927

These notes should reach you when many may still be considering whether to attend the class reunion at East Bay Lodge, Oster-ville, Mass. I hope that those who are undecided will put practical considerations aside and take a long-term philosophical point of view, realizing how infrequently one has the opportunity to go to a 20th reunion, and how much those of us who are planning to attend want to see the rest of us there. The 20th reunion will really be worth that special effort to attend.

Robert N. C. Hessel has made the headlines of the Worcester papers as a result of his appointment as department superintendent of the cold roll division of the American Steel and Wire Company. He joined this company immediately upon graduation and was made a general foreman in 1937. He was transferred to the South Works in Worcester in 1942 and was appointed assistant superintendent last year. His home address is 21 Grenada Street, Worcester.

Andy Anderson has been appointed plant manager for M. H. Rhodes, Inc., of Boston. During the war, Andy was released from the Army at the request of the Navy (quite unbelievable) so that he could be the works manager of the Edison Company at West Orange, N.J. Subsequently, he was made vice-president and plant manager of the Schick Company.

After having had no word concerning Bob Wallace for a very long time, we discovered his beaming countenance in the *Indianapolis News*. He had resigned his position as vice-president in charge of engineering at the Marmon-Herrington Company, Inc., to become executive engineer of the Diamond T. Motor Car Company of Chicago. Bob was with Stutz in the late 20's but had been with the Marmon-Herrington Company ever since its organization.

Fritz Glantzberg came into the office here (Room 3802B, R.C.A. Building, New York) with four rows of ribbons and plenty of experiences as an Army colonel to talk over. He is now at the Air University at Montgomery, Ala., and wants to see any visitors to that climate.

See you at East Bay Lodge. — JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, Inc., 50 West 50th Street, New York 20, N. Y.

1928

Perhaps you've all heard the big news, but our President has a noticeable strut in his walk these days, occasioned by the birth of a male heir on March 8. Theodore

William Jope is the young man's name, and he is a lusty lad with very effective loud-speaking equipment. Also, the heir's hair is definitely red in color, which ties in somehow with the Jope ancestry, but we'll have to get a fuller explanation of that at the 20th reunion next year. In the meantime, Ralph has entered the young man at M.I.T. and started a big bank account for him. The Class sends its sincere congratulations. Speaking of offspring, the Class of '28 seems to be getting like a lot of newlyweds — Art Josephs reports the addition of young Susan to his family group, and Ernie Knight has a second son, Paul Marshall Knight, born on March 6. We are all very pleased with this news.

Tom Larson has been named New England manager of the Carbic Color and Chemical Company. Tom's new office will be in Providence. From him we have obtained two interesting clippings. The first states that E. Vernon Lewis of the Du Pont nylon research section has attended a conference of research men in England at the Faraday Society. Also, Tom enclosed a nice picture of Walter Hildick, whose appointment to the position of vice-president in charge of manufacturing at the Nashua Manufacturing Company was previously announced in these columns.

From Jim Donovan we have received the following interesting letter: "Walter Nock writes from Santa Barbara, Chia, Mexico, that he has been made superintendent of the American Smelting and Refining Company's works there — after 18 long hard years of plugging. Walter has a large house with plenty of accommodations, a pleasant wife, and lively son. He says, however, 'I never see any of our Class around here. Blackwood did drop in last week; but unfortunately, I was not at the plant and therefore missed him. Even though we are both working in the mining business, I haven't seen him for 12 years. If all goes well, I shall probably be back for a visit to Boston in 1948, planning to be there for the 20th reunion. It is rather a long way ahead, but that is our present intention, for I want to take a bird's-eye view of schools in preparation for my son's education. We are going to send him out quite young, for they get to be wild Indians down here!'"

"I hope everybody else is planning on a big successful 1948 reunion, too (editorial comment). I also have a letter from John Mayoral, who is with Destileria Serralles, Inc., Mercedita, Puerto Rico. John writes as follows: 'It seems incredible that nearly four months have passed since you wrote me. First, I went away to Venezuela for a few weeks, and when I got back, work had piled up. I have spent the last 13 years in the sugar industry and have been fortunate in having occasion to work in the raw sugar end, refining, alcohol, rum manufacturing, and candy. All this is, of course, part of the sugar industry in its broad sense.'

"At the American Institute of Chemical Engineers' meeting at Atlantic City in December, I ran into Dick Hoak, who was working on waste disposal matters for the State of Pennsylvania. Dick was his old self, doing a good job of ribbing some Scotsmen about the contents of a haggis pudding. He made it sound distinctly unappetizing. They, in turn, were trying to make some Pennsylvania Dutch food sound

as bad — but couldn't compete with Dick's efforts." Jim Donovan also mentioned that Bill Gorfinkle had joined George A. Hormel and Company at Austin, Minn. Bill has a splendid position and is in charge of a new operation for Hormel.

John Houpis, now a Navy commander, wrote to Ralph Jope from Bikini Atoll at the time the Navy was preparing for the atomic bomb experiments. The following excerpt is from his letter: "I came out here more than two months ago, one week after the evacuation of the natives. I am heading the Electronics Instrumentation Group, which is concerned with the installation and operation of radar, television, sonobuoys, echo-sounding, telemetering, remote control, and so on, for the measuring and recording of various physical aspects of the bomb blast and its after effects. It's the most interesting job I have had in my naval career. I wouldn't have missed it for the world. The islands here are semidesolate. The only evidence of human habitation one sees is a few bare native huts and a small cemetery, the graves of which are decorated with empty sake bottles. Some 140 of them lived, I understand, on coconuts and fish. The only drinking water they had was that which they could collect in concrete cisterns during the rainy season. Some days it's pretty hot; the temperature runs up to 110 degrees F. under the shade. If it were not for the low velocity breeze, which blows constantly, life would have been unbearable."

Roland F. Beers and William B. Heroy have formed the firm of Beers and Heroy, consulting geologists, geophysicists, and engineers to the petroleum and mineral industries, at the Tower Petroleum Building in Dallas. Roland was previously president of the Geotechnical Corporation. — GEORGE I. CHATFIELD, *General Secretary*, 6 Alben Street, Winchester, Mass.

1929

News of the Class is still comparatively scarce, and we are indebted to Gordon Williams for the following information: "After reading your class notes in the January Review, I decided it was about time for me to help out with some available news of Course I men, including myself. An outline of my own activities first may explain how I ran into some of the other men. A few months ago, after 16 years of government service, I became associated with the Knappen Engineering Company of New York, a firm of consulting civil engineers. For the previous eight years, I had been a hydraulic engineer with the War Department. Except for special technical investigations relating to military operations, my assignments during the war were not particularly glamorous and consisted largely of field construction on incomplete flood control projects and preparation of plans for postwar civil works projects. In 1944 and 1945, I was in the Office of the Chief of Engineers in Washington and was well surrounded by war activity.

"Last June, I spent a very pleasant evening with Hunter Rouse and his family in Iowa City. Everyone probably knows that Hunter is a professor at the University of Iowa and is also director of the Iowa Institute of Hydraulic Research. Through his works and writings, he has an international reputation in the fields of hydraulics

and fluid mechanics. During the same visit to Iowa, I met Cliff Kittredge, who is a professor of hydraulic engineering at Princeton University. Another of our Class who entered the field of hydraulics was Larry Defabritis, whose tragic death occurred a few years ago. He was associated with the National Hydraulic Laboratory at the Bureau of Standards in Washington.

"In December, 1945, I met Dan O'Connell at a dinner of the New England Road Builders Association in Boston. At that time, Dan was an officer of that association and was carrying on the family contracting business in Holyoke, Mass. Last year, when I was stationed in Providence, I had several visits with Ted Malmstrom. He was a major in the Corps of Engineers throughout the war and had assignments in this country, Alaska, and the European theater. After leaving the Army, he joined the Coca-Cola Company as a construction engineer and is now in South Africa with his wife and two children. Ted has not changed a bit and still retains his hearty humor and enthusiasm. In recent years, I have met Bob Philippe several times. He is a soils, mechanics, and foundation engineer with the War Department and is in charge of that type of work for the Ohio River division of the department. His headquarters are in Cincinnati.

"At the annual meeting of the American Society of Civil Engineers in New York in January, I ran into Link Reid and Henry Giles (Course XI), neither of whom I had seen since graduation. Link was teaching at the Military Academy at West Point during the war and is now a professor at Cornell. Henry has been in sanitary engineering work with the State of Connecticut since leaving the Institute. Behind his glasses and moustache, he still has the same bright and shining countenance. Fred Ricks has been a civil engineer with the War Department since 1929. His work has taken him about the country on the construction of many locks and dams. He was last heard from in Florida, where he is in charge of work for the proposed barge canal across the state. Within the last year, I have seen Hap Adkins at the Institute, where he is a professor in the Mechanical Engineering Department. I have yet to see George Logan since graduation, but I know he is around Philadelphia, where he is vice-president of the M.I.T. Club of that city. At least I have accounted for 10 classmates in this letter. I should be glad to meet any '29 men at my office, 280 Madison Avenue, New York City, and to have lunch with them."

Information has also been received from Butte, Mont., that Ed Tittmann is in that region. The announcement ran as follows: "E. McL. Tittmann, for the past five years manager of the East Helena plant of the American Smelting and Refining Company, is being promoted to the position of manager of the plant in El Paso, Texas. Kuno Doerr, Jr., assistant manager of the East Helena plant and now manager of the El Paso plant, will become manager of the Selby plant, near San Francisco. These changes will become effective during the first quarter of 1947. Mr. Tittmann is a valued member of the executive committee of the Mining Association of Montana."

We have heard by telephone from Bion Francis, who is also here in Washington

with the Federal Loan office, after a number of years in the insurance field. One of these days we ought to get together for luncheon. The same invitation is extended to any of the rest of you who come to Washington, where I may be reached on REpublic 7500, extension 6104. — EARL W. GLEN, *General Secretary*, 407 Fairfax Road, Bethesda, Md. FISHER HILLS, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

1931

After being on the New England scene most of the time since graduation, Ben Steverman decided to transfer his activities to the region beyond the Hudson River. Ben resigned his job as sales manager of Photoswitch, Inc., in Cambridge on the first of January and is now a sales engineer for the J. K. Munhall Company of 505 Delaware Avenue, Buffalo, N.Y. His field is electrical controls and heating apparatus, and he is stationed in Rochester, where he expects to make his home. In the process of changing jobs, Ben somehow succeeded in talking the undersigned into assuming the secretaryship of the Class, a post Ben has been handling capably and cheerfully for quite a few years. The present incumbent undertook the job with a few mutterings about the difficulty of making bricks without straw, but the Class can easily correct that condition by bombarding him with notes on the doings of 1931 men.

Speaking of 1931 men, the Atomic Energy Commission has selected James B. Fisk for the important work of directing its division of research. Jim got his doctorate in Physics at the Institute and then spent two years at Harvard as a junior fellow. Later, he was professor of physics at Duke University and since 1939 has been with the Bell Telephone Laboratories. He is married and has three sons. — Another courageous migrant from New England is Hank Ahlberg, who became general manager last fall of the Johnson Manufacturing and Engineering Company of Wilkes-Barre, Pa. During the war, Hank served with the War Production Board and was manager of production service operation in the New England states. His new job is in the field of textile machinery. Hank is married and has one boy and one girl.

The omniscient Secretary Locke '96 reveals that L. S. Gifford has left the Borg-Warner Corporation in Kalamazoo to become plant engineer for the Signode Steel Strapping Company at 2600 North Western Avenue, Chicago, Ill. They make those handy bands for packaging, plus the tools used to do the banding. — W. C. Mentzer has recently been elected regional vice-president of operations for United Air Lines. He is now in charge of all operations in the region from Denver to the Atlantic. Mentzer, who received his S.B. degree in Course XVI, had been director of engineering and had a prominent part in the development of the DC-4. He lives with his family in Western Springs, Ill.

That gives you an inkling of the positions of responsibility '31 men are assuming these days. More of the same will appear in these columns as soon as that avalanche of notes begins to arrive. — JOHN N. HIGGINS, *General Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

1932

At a convention of the Technical Association of the Pulp and Paper Industry held in New York in February, I attended a luncheon at the Engineers Club which was organized to bring together Tech men in the paper business. Bill Beckett '34 was around town but was unable to attend. Earl Anderton, Bob Emerson, and Ed Poor were there, however, and from them were gleaned a few bits of news about our over-modest classmates.

Potts Chambers lives on Park Avenue, Swarthmore, Pa. He is apparently working for Du Pont and has two children. (Be a good guy and enlarge on that, Potts.) Bill Hall is a design engineer and is working for the Atlantic Refining Company at Springfield, Pa. He is rumored to have some offspring. Joe Winkler is in Hammond, Ind., working in metal fabrication. He has recently been transferred to a job in the production end of the business.

Bob Emerson lives at 66 Eakens Road, Munsey Park, Manhasset, Long Island. He is still with the Manifold Supplies Company in Brooklyn and has two girls and one boy. Earl Anderton is still with the Scott Paper Company and has charge of quality control in the Fort Edwards and Glens Falls Mills. Andy lives at 126 Cooper Street, Glens Falls, N.Y., and has a son and a daughter. Ed Poor, who was formerly with W. C. Hamilton and Sons, is now with American Cyanamid. He lives at 65 River Street, Stamford, Conn., and spends much time sailing on Long Island Sound. Incidentally, Ed is still a bachelor. As for Carroll Wilson — you have only to read your papers; and everyone has heard from Tom Sears. I'll be seeing you in June if the pressure lets up a bit in the paper business. — CLARENCE M. CHASE, JR., *General Secretary*, 1207 West 7th Street, Plainfield, N.J. *Assistant Secretaries*: CARROLL L. WILSON, National Research Corporation, 100 Brookline Street, Boston 15, Mass.; WILLIAM A. KIRKPATRICK, Allied Paper Mills, Kalamazoo, Mich.

1933

W. W. Newton writes as follows: "My recent change in address (to 3712 Haggar Drive, Dallas, Texas) was a result of the construction of a new building to house the entire Geotechnical Corporation. During the past seven years we have been occupying three different locations, one of which was our research laboratory in Cambridge. Our new building is large enough to house the entire company, and thus we are looking forward to an increase in efficiency of operation. There has been no change in my status, which is that of vice-president of the Geotechnical Corporation."

In regard to A. Y. Snell, a press release from the headquarters of the European Air Materiel Command at Erlangen, Germany, makes the following statement: "Lieutenant Colonel A. Y. Snell of Oswego, New York, has recently been awarded the Army Commendation Ribbon. . . . Colonel Snell is serving as deputy signal officer for the E.A.M.C., assisting in the maintenance of wire, radio, and radar equipment for the vast supply arm of the United States Air Forces policing Germany from the air. He has seen service since 1934 and was with B-17 and B-24 groups during the war. He is

a graduate of . . . Technology in Cambridge, where he majored in electrical engineering. He is the son of Mrs. J. G. Snell of Brockton, Mass., and his wife resides at 140 East 4th Street, Oswego."

On Helen F. Tucker, the Philadelphia Club, of which she is a member, reports as follows: "Dr. Helen F. Tucker, who is associated with the Rohm and Haas Company here, was featured in a recent issue of *Chemical and Engineering News* as a member of the 'Tucker Family — A Family of Chemistry,' which included her distinguished father, Charles William Tucker '96, and brothers, Charles Mason Tucker '22 and George Raymond Tucker '25. This is a Technology family if there ever was one."

Margaret B. (Kelly) Geddes sends this brief résumé: "Here is all my news. My husband, back from the Pacific, and I, back from Washington, D.C., reopened our office in 1946 as Geddes and Kelly, architects, Hospital Trust Building, Providence, R.I. Our home address is 29 Manning Street, Providence, R.I. We'd be pleased to see any classmates and friends." — W. G. Manley, in a note giving his address as Colonel W. G. Manley, U.S.M.C., writes in part as follows: "For the past year I have been a member of the staff of the commanding general of the Fleet Marine Force in the Pacific."

Fred Aldridge provides us with a summary of the past 15 years from which we gather that his family status includes a wife, the former Jean Cairns Miller of Wilkes-Barre, Pa., a son, and a daughter, 11 and 7 years of age. After leaving Technology, he obtained his M.S. at Harvard in 1941 and attended George Washington University and also the United States Army school of military government at the University of Virginia. He reports a varied list of occupations since leaving the Institute, including connections with the following organizations, the City of Cambridge, the Metropolitan District Commission of Boston, the Massachusetts Department of Public Health, the United States Public Health Service, in which he was promoted to the rank of major in 1944. He was in charge of sanitation for refugee camps in Egypt, Palestine, and Syria in 1944 and served as regional sanitary engineer in war-torn Greece for the Military Liaison Group in 1944 and 1945. He became chief sanitary engineer for the United Nations Relief and Rehabilitation Administration for 1945 and 1946 and traveled extensively in Greece, Italy, Albania, Austria, and Czechoslovakia, directing this work. He was regional sanitary engineering consultant to the National Housing Agency for the states of Arkansas, Colorado, Kansas, Louisiana, Oklahoma, New Mexico, and Texas. He is now public health engineer and director of the division of sanitation of the City of Seattle, Wash.

A glimpse of Pierre S. du Pont, III, in Delaware, is given by a clipping from the *Wilmington Star*, which describes him as assistant director of the Du Pont Company's trade analysis division. His year-round home is at Rockland, although he enjoys spending his free time at his farm on the eastern shore of Maryland with Mrs. du Pont, young Pete, 12, Jane, 7, and Michele, 5. He loves to sail, hates motorboats, and takes an active interest in the social welfare of the community.

Gus Kidde of Westfield, N.J., for the past year since leaving the service, has been connected with Foster Snell, consulting chemists. — GEORGE HENNING, JR., *General Secretary*, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn 7, N.Y. ROBERT M. KIMBALL, *Assistant Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

1935

Jack Colby, who was elected to succeed Walt Stockmayer as president of the Class at reunion in September, stopped by for Sunday dinner here in Fairfield in March. Jack outlined discussions he has had with Bob Granberg and Luke Packard, our new Vice-president and Treasurer, on the possibility of compiling a list of class members' home and business addresses, occupations, and so forth, for distribution to everyone. Several fellows, including Ned Collins, Gerry Golden, Ernie van Ham, and Perce Ehrlich are willing to help us with the work. It would, however, spur our enthusiasm to devote our time and utilize class funds for the proposition if a number of you would express your opinions of it on postal cards to me. Jack and his wife, Priscilla, spent the night before visiting me with Jack Talbert and his family in Ridgewood, N.J. Talbert is with the Wright Aeronautical Corporation and has worked for several years on the development of cabin pressurizing and engine supercharging equipment.

Wes Loomis writes that he had all plans made to fly from St. Louis to the reunion in September, but that his father's death at just that time prevented the trip. Since then Wes has succeeded his father as president of the Loomis Advertising Company and returned to Kansas City. He and his wife, Polly, and two youngsters now have a house of their own, which Wes claims is a real improvement over several months in a two-room apartment. Wes mentions that he and Polly have seen Hal Bemis and Charlie Taylor in Philadelphia recently, and that on two occasions he has crossed Fiske King's path in St. Louis. Hal, he states, is assistant general manager of the Campbell's Soup plant in Toronto.

A new prospect for an M.I.T. Married Graduates' Protective Association is Sam Fox. In February, Sam married Susan Urban of Buffalo, and they are now living in West Hartford, Conn. — J. BARTON CHAPMAN, *General Secretary*, 7 Lalley Boulevard, Fairfield, Conn.

1937

By now those of you who have up-to-date addresses on file with the Alumni Association should have received considerable background on our plans for a whopping big tenth reunion. Since it is necessary to submit these class notes in March, the background we pass on here is tentative, but it will serve to let those who have not received the tenth reunion mailings but may read *The Review* know that plans are brewing in time to scramble aboard the bandwagon. A temporary steering committee consists of Joe Heal, Bob de Raismes, Bob Thorson, Bob Harris, and Phil Peters. It is the intention of this group to get out preliminary questionnaires and to make certain that every member of the Class who is willing to

work to make the reunion a success has the opportunity to do so. Unfortunately, the Class President and Class Secretary are both away from Boston; hence, although vitally interested in arrangements, they are unable to work directly with the committee. The big Alumni Day festivities of the Institute take place on Saturday, June 14. We plan to integrate our celebration with these activities: for instance, our reunion might begin Thursday afternoon, June 12, and extend through Saturday morning, June 14, when we could descend en masse on the regular Alumni Day activities and climax our get-together with the Alumni Banquet, held on Saturday evening.

We are thinking of gathering the clan at a hotel on Cape Cod, and right now the various hotels are being visited to find the most appropriate. It is anticipated that the daily rate for room and meals will be somewhere between \$10 and \$12 a person. It is the committee's feeling that informality should be the motif of our reunion. We should have time to visit with those of our classmates whom we haven't seen for up to 10 years. There will be plenty of provision for golf, tennis, swimming, and other activities. You may well want to combine the reunion with your regular vacation, and so it seems logical that wives should be welcome except at the big class banquet on Friday evening, which should definitely be a closed affair. Tremendous enthusiasm has been shown by various individual classmates all over the country. Without doubt, many men from as far away as Chicago and beyond will be heading east in June to attend the reunion. A number of men out on the Pacific Coast may not be able to make the trip, and serious consideration is being given to the possibility of a Pacific Coast reunion for those who can't get east. Your reaction to this point on preliminary questionnaires will help determine its feasibility.

This reunion can be a success only if everyone enthusiastically approves arrangements, and is willing, ready, and anxious to join in and make our tenth the biggest ever celebrated by an M.I.T. class. If you haven't received any communications about it before reading this item in the class notes and want all the details, won't you drop a line immediately to Rutherford Harris, in care of the Boston Manufacturing Mutual Fire Insurance Company, 60 Batterymarch, Boston, Mass. Bob Harris will see that you get brought up to date in a hurry. — WINTHROP A. JOHNS, *General Secretary*, 34 Mali Drive, North Plainfield, N.J. PHILIP H. PETERS, *Assistant Secretary*, 7 Kirkland Circle, Wellesley Hills 82, Mass.

1938

Mr. and Mrs. Ernest W. Brian of Ridgewood Park, N.J., announced the engagement of their daughter, Marion, to Frank Atwater in February. Miss Brian is a graduate of Simmons College and the Johns Hopkins school of dietetics. Frank is with the Fafnir Bearing Company in New Britain, Conn., and is also lecturing on industrial management. — Carl Abel was married on February 1 in Dallas, Texas, to Sara Wheat.

Scott Lyon, who has been vice-consul at Antwerp, has been assigned to Mexico

City as our third secretary and vice-consul. When Scott finished at the Institute, he was employed by the Standard Oil Company of New Jersey as a petroleum engineer, but he soon changed his line of work and joined the foreign service of the State Department. His first assignment was to the American Consulate General in Lisbon in 1940.

Art Tingley has been named head of the new textile chemicals division of the textile research department of the American Viscose Corporation, Marcus Hook, Pa. Art has been working on yarn finishes for the department's knitting division and assumed his enlarged duties in January. The functions of the textile chemicals division will be to develop new lubricants and sizes for rayon and other fibers and new methods of application of these materials, as well as to service present products developed by the American Viscose Corporation's textile research and chemical research departments and manufactured by the Atlas Powder Company. Before going to American Viscose, Art was associated with the Atlantic Rayon Corporation as chemist and dyer and with the Warwick Mills and Plymouth Cordage Company. — DALE F. MORGAN, *General Secretary*, Carbide and Carbon Chemicals Corporation, 30 East 42d Street, New York, N.Y. *Assistant Secretaries*: RICHARD MUTHER, 180 Elgin Street, Newton Center 59, Mass.; ALBERT O. WILSON, JR., 32 Bertwell Road, Lexington 73, Mass.

1939

Dave Morgan writes from Mexico City, where he and his new bride have been spending four weeks, combining their honeymoon with business; they expect to return to New York shortly. Before his marriage, Dave had spent eight months in Europe for his company, supervising the installation of underground mine car loaders, and he had been in all the mines of France, England, Belgium, and Germany. The trip proved to be most interesting from many points of view. Upon his return from Mexico City to New York, he expects to be working in the export field of mining and industrial equipment for his company.

From the New York *Herald Tribune* it is learned that Fred Cooke, now a lieutenant commander in the Navy, is engaged to Eugenia Bain Colclough. Fred has been in the Navy since 1941 and recently was transferred from San Francisco to the Navy Department in Washington.

A release from Cornell University tells us that Richard Feynman, promoted to an associate professorship in the department of physics, was one of the Cornell faculty members on the staff of the Los Alamos Laboratory of the Manhattan Project during the war. It was while at Los Alamos that he was originally appointed to the Cornell staff as assistant professor.

Word from our Course V coeds reveals that Ida Rovno Blackman is now an advertising executive and mother of a two-year-old son, Peter. Also, Ruth Berman Pitt, now living in New York, is both studying and working at the Columbia Medical Center; Mrs. Pitt, likewise, is mother of an 11-months-old daughter, Susan Claire.

And here's hoping to see our Class well represented at all the alumni functions

next month. Get there if you can! — STUART PAIGE, *General Secretary*, 701 Mill Plain Road, Fairfield, Conn. ROBERT C. CASSELMAN, *Assistant Secretary*, 271 Cypress Streer, Newton Center 59, Mass.

1941

Our list of engagements and marriages has settled down to a normal peacetime rate of increase. We have the engagement of Peggy Morrissey to Ray Harper. Peggy was in the Marine Corps Women's Reserve and served 10 months in Pearl Harbor. Ray, as you will recall, was a captain in the Army and served three and a half years in Europe. February 15 was the date of the marriage of Mary Louise Cahill to Frank Regan in Brookline. We are sorry we could not attend but do enclose our best wishes. Evelyn Alm is engaged to Carl Streed, who is presently connected with the Socony-Vacuum Oil Company at Paulsboro, N.J. Our prexy, Will Mott, announces the birth of Susan Charlotte on January 11. Anne Perkins was married to Davis Dewey, who took his Sc.D. at the Institute in 1941 and served as a lieutenant commander during the war. Beverly Sweatt is engaged to Mason Downing. Mason served in India and China as a major in the Chemical Warfare Service. He is now doing graduate work at the Institute and has recently been appointed assistant director of the M.I.T. practice station in Buffalo, N.Y. Sally Hayes is engaged to Fritz Krum, who served as a technical sergeant in Europe during the war. Ralph Emerson Sexton, 2d, weighing eight pounds two ounces, arrived in Winchester on February 1, the son of John and Marge Sexton. On February 7, Helen Millicent Hovland became Mrs. Carl Aronsen in San Francisco, according to our star correspondent, Ivor Collins. Adele and Dave Shapira announce the arrival of one Susan Ann to their home in Brooklyn. Elizabeth Oliver and George Palmer are making plans for a December marriage (December, 1946, we shamefacedly admit — congratulations).

The Du Pont Company announced that Dr. Jake Nolen has joined the chemical division as a group leader. Gladys Thompson is teaching strength of materials at City College and drew the usual attention afforded our famous coeds, when she attended a recent meeting of the American Society of Civil Engineers. Earle Benson gave a paper at the January meeting of the Topsfield, Mass., Men's Club on "What's New in Lighting." Arthur Stevens, who is teaching at the Institute, gave a talk on atomic energy before the Women's Club in Framingham. Joshua Conner, who served on the staff of the Naval Research Laboratory in Washington, was recently cited by Secretary of the Navy Forrestal for his successful research into new methods of control in the experimental gas chamber, which was instrumental in adapting electronic circuits for analyzing toxic gas. Norton Polivnick has received his M.S. degree from Harvard in architecture. Al Bowker has been appointed assistant professor of mathematical statistics, beginning January first of this year. During the war, Al served as assistant director of the Statistical Research Group applied mathematics panel at Columbia University. In case you haven't heard of their work, let us assure you it was well received by the

services. Burnham Kelly, who is assistant director of the Albert Farwell Bemis Foundation, gave a talk on the "Law and Techniques of Housing" at the Tandem Club, Melrose, Mass. Otto Zmeskal was recently appointed to the post of director of the metallurgical engineering department at the Illinois Institute of Technology in Chicago.

Ensign Harry Gill Whitman, Jr., has been awarded posthumously the legion of merit by Secretary Forrestal. Lieutenant Frank J. Jerome, Lieutenant Richard S. Wiener, and Lieutenant Thomas M. Logsdon have been officially declared to be war casualties. We pause a moment and think back when. . . — STANLEY BACKER, *General Secretary*, 101 Providence Road, Primos, Pa. JOHAN M. ANDERSEN, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

1942

The first thing you probably want to know about is the reunion in June. Plans are definitely being made. It was felt that we are not yet in a position for a seaside hotel gathering, so it will probably be a dinner get-together in Cambridge around Alumni Day, June 14. More details will be provided later.

There are several letters from classmates, at hand with interesting news. Frank Staszkesky writes: "Dave Mitchell and I are here with Du Pont in Wilmington, and we are planning to attend the Alumni Day Activities."

Here is a long letter from Ed Edmunds: "It takes the thought of a reunion to get my pen and paper out for a contribution to the class notes. We very definitely should plan a get-together of some sort for the forthcoming Alumni Day, even if we can't do it on the scale the older boys seem to come up with. I guess it takes more than five years to become V.P.'s and take two or three days off during the week. I am in favor of getting the wives in on this first big reunion. [Thanks for the ideas, Ed. W.L.] The only '42 man I've seen more than a glimpse of was Heinie Shaw, and that was a year or two ago, when he was at Pratt and Whitney or Hamilton Standard up in Hartford. I am now working with the Davison Chemical Corporation here in Baltimore as a process engineer after having spent four years in the Army. My original Army work was in the Chemical Warfare Service Course with a lot of Course V and X boys, but I transferred to the Army Air Forces after only three months of that and spent the remainder of the war as an Army test pilot, finally winding up at the Glenn L. Martin Company as production officer and chief of flight test. I attained the exceptionally high rank of captain and enjoyed reading of all our majors and lieutenant colonels who couldn't understand why promotions were so slow. All my fighting was done in local bars; so I'll let Wild Bill Kellogg take credit for winning my share of the war — he certainly did a bang-up job. That is my history to date. I am very anxious to see as many of the old boys as I can."

Curtis Buford, I, is an inspector of freight transportation for the New York Central Railroad in Cleveland. Curt will marry Barbara Anderson of Seattle on April 29. Charles Beatty is an engineer for Westinghouse Electric. He was married on last

October 12 to Suzanne van Dyke. He spent 44 months in the Air Forces, with 33 months in the South Pacific. He received his M.S. at Cal Tech last year.

Here is a letter from John O'Connor in Akron: "Bob Wilson and I went to a Tech Club meeting the other night to hear Professor Chalmers, and whom did we meet? Yes, Jack Arend. We were informed that Hank Titzler is at Goodyear Aircraft, and it was confirmed at a Tech wives' meeting. Bob's wife, my wife, and Hank's wife all met and had a swell time. Jack does not have one to join the club. Bob has a family of four; Hank, a family of two; and I, a family of three. Bob and I are at Firestone Tire and Rubber."

We have three engagements to announce this month. Samuel Leventhal is engaged to Judith Wiener of Detroit. William Clark is engaged to Mary Harris of Warwick, R.I. Robert Fay is engaged to Loretta Ann Regan of Lakewood, Ohio. Mr. and Mrs. Howard T. Evans announce the birth of Cecily Ruth Evans on February 4. This, I believe, is the first baby that belongs entirely to 1942. Mrs. Evans is Eloise Humez, also M.I.T. '42.

I have a letter from Carl Jealous, who is at Oak Ridge. He has recently transferred to the Clinton Laboratories in Oak Ridge, where he will be in process development work in connection with the radio-isotope. He says, also: "By the way have a cigar! Our second daughter, Mary Charlotte, was born on January 31: nine pounds four ounces; and everyone is doing very nicely." That's all for this month. More details on the reunion will be in later columns and in the mail. — WARREN S. LOUD, *Acting Secretary*, Room 2-272, M.I.T., Cambridge 39, Mass.

1943

In Boston on last February 23, Stan Porosky and Lois Marjorie Stern were married. Lois' home is in Brookline, and she is a graduate of Mount Vernon Seminary Junior College in Washington, D.C. The newly married couple will make their home in Schenectady for the time being. The engagement of Robert W. Moore and Vera Cardillo has been announced.

Martin Winter sends us an autobiography, which reads as follows: "After graduation I was a student engineer at the Bound Brook, N.J., plant of the Calco Chemical Division of the American Cyanamid Company. In October, 1943, I went to work on a secret project at Columbia University as a research assistant. By the beginning of 1944, I had figured out what the project was and had decided to get into the plant end and out of the laboratory. I managed to get transferred to the Jersey City, N.J., plant of the Kellogg Corporation in March. This was the pilot plant for the Oak Ridge plant of the Manhattan Project. Here, I was leading the mechanical research and development section. Our most important work centered on the removal of oil mist from the exhaust of vacuum pumps. In July, 1945, this plant was closed, and I returned to Tech on a Navy project dealing with infrared receivers of very high sensitivity.

In April of last year, I finally managed to get out of war projects and went into partnership in the Standard Ink and Color Company in Brooklyn. We manufacture

plate-printing and die-stamping inks. Difficulty in obtaining necessary raw materials kept us very much occupied. The outlook for this year is somewhat better, although it is still not too good. During the past eight months I have also had to contend with a severe case of sinus trouble, which kept me from helping with my business duties, to say nothing of preventing me from participating in extracurricular activities. However, I have seen Bert Picot a few times. He is running a photographic studio in Brooklyn. I have heard from Dick van Voorhees' wife (the former Linda Spears of West Warwick, R.I.) that he is expected home from Arabia in April."

Fred Perry has his master's degree now and has taken a post with A. D. Little here in Cambridge. He tells us that he and Nancy are having a lot of fun with the new baby, Clark Bancroft, in spite of his carrying on at 2:00 and 6:00 A.M., plus or minus an hour or two.

Finally, a few words have come from Bud Babcock, who thinks that it never should be said that anybody "can outdo old A.B. when it comes to letting the rest of X-C and '43 know of my glorious and fascinating (?) history since I left the old Institute. I must admit, shamefully, that I have been a very poor correspondent, and that it wasn't until I read the January notes that I decided that 'now is the time for all good men to come to the aid of their Class Secretary.' (Thanks, Bud, for those kind thoughts!)

"I shall start from the point where the last news of DeeDee and me was mentioned . . . inventing atom bombs in Oak Ridge. We stayed there until about the end of June, 1946, when separation orders finally gave me the green light to start living again. After my leaving Fort Bragg a free man, DeeDee and I took a short trip to Minneapolis to visit her sister for a few weeks, and then went to Stamford, Conn., where my parents are living. We lived with them for about two months, enjoying the summer on the Sound with such activities as sailing, swimming, party-ing, and loafing. By the time September came around, I decided that I had better start working for a living and got a job with the Casein Company of America (a division of the Borden Company). My first duties were in Bainbridge, N.Y., where I learned the ins and outs of resin glue manufacture, with a few very interesting weeks in a formaldehyde plant. Practice School certainly came in handy there! Just before winter set in, we were transferred to our Kernersville plant near Greensboro, N.C. We are making urea-formaldehyde resin, and it certainly keeps me busy and most interested. We have been here since the first of the year and considered ourselves very lucky to get ourselves a furnished garage by the middle of February in a very nice section just outside of Greensboro. I expect to stay in the plant for at least a year, and this will be the first time that DeeDee and I can call ourselves settled since last year.

"Since leaving Oak Ridge, we have been able to see Bob Gunther, and Charlie Crocker, when, with others, they sailed the *Jean Lafitte* into our back yard at Stamford. We had a gay party, coincident with a party for my father's new sailboat. From what we heard from Crocker and Gunther, we really missed some good re-

unions in Boston and New York. Perhaps I can make others in the future. Stan Roboff sent us a Xmas card but left off the return address. Great! I have not seen Stan since September, 1945, and have not the least idea what he is doing now. As for news of other than X-C men: Ed Czar is working for Birdseye in Albion, N.Y.; Gene Morrison, married last fall, is in Norfolk, Va."

Well, this is all for this month because there isn't any more! — CLINTON C. KEMP, *General Secretary*, Barrington Court, 988 Memorial Drive, Cambridge 38, Mass.

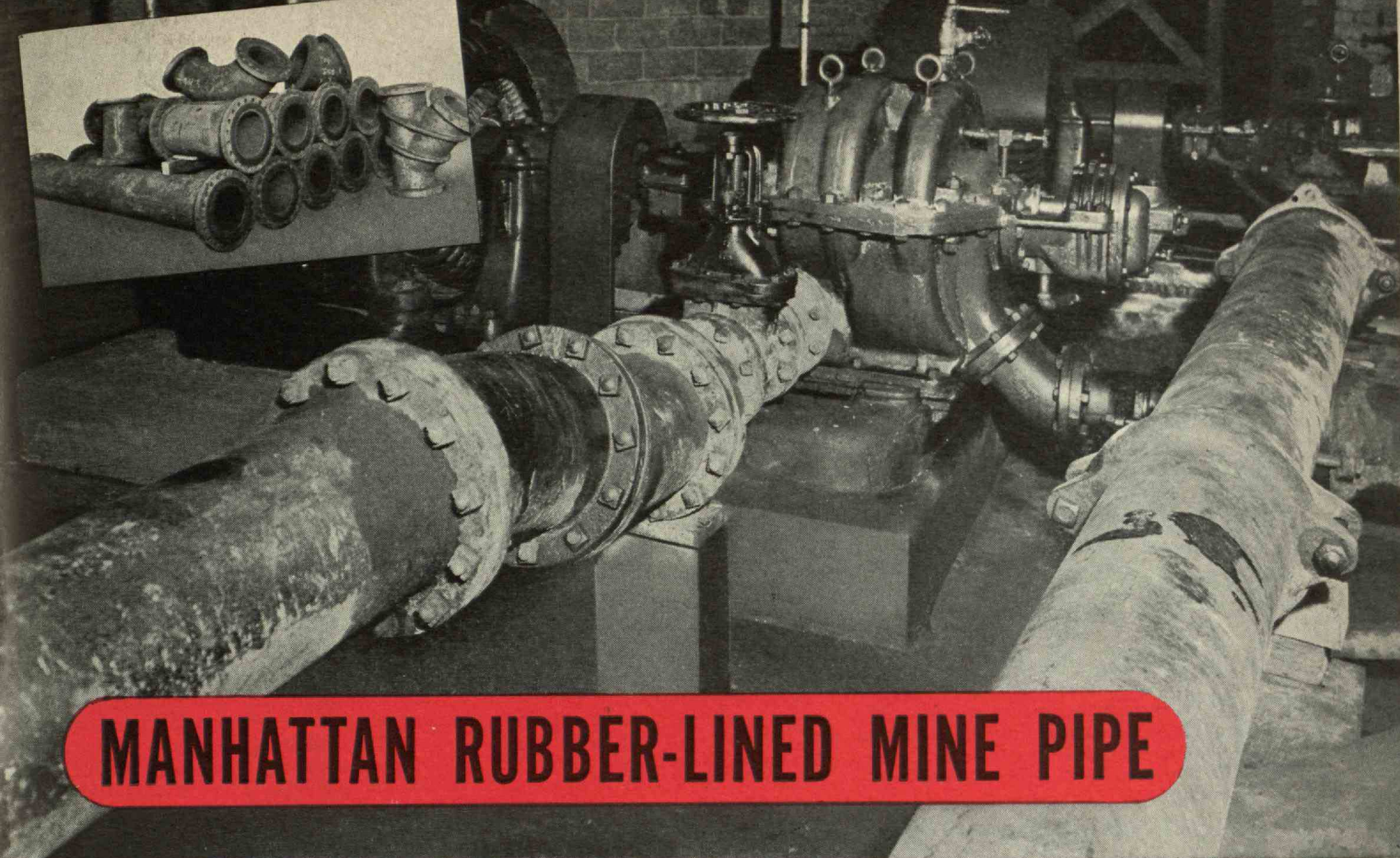
1944 (2-44)

Once again your Secretary has taken a trip and is presently occupied in the purchasing department of the Ford Motor Company in Dearborn, Mich. Last week I went to an alumni dinner in Detroit and saw Chris Roden, who is also at Ford. He is in the student engineering course offered by Ford and expects to finish next month. Chris tells me that Harry Dickey is located in Toledo, Ohio; but as yet I don't know where he is working. I have also run across Sonny Dunlap again; he is living at home while working at the Toronto Monsanto Chemical Company in Detroit.

Last month after the notes were written, I received the wedding invitation of Scipio Kanter, who married Ellen Ann Thorp on January 26 in Mexico. Another wedding which has come to my attention is that of Richard Palme and Mary Hansell Cousar of Florence, S.C. Dick is at present a research assistant at the Institute, while working on his master's degree in Mechanical Engineering. I have a card here from Hank Bowes which tells of a new addition to their family on February 13, weighing in at five pounds. Her name is Cynthia Jane. Hank says it's lucky she's a girl, since the odds are she won't want to go to Tech. Maybe he's got something there.

Last month I was able to see Bill Schlegel in his new home near Reading, Pa. The old boy is really fixed up as an executive in his father's hat factory. Remember the name Hendel, as it spells "fine hats." (I expect a nominal fee from Bill for that plug.) Rumor tells me that Doug Root made quite a killing during his fling in the used car business. He always was the one for swinging a good deal.

New address cards this month show Sumner Ackerman to be in Roxbury, Mass.; Roland Benjamin, in Baltimore, Md.; Dr. Leo Cravitz, in Rochester, N.Y.; Holton Harris, at the Universal Oil Products Company, Chicago, Ill.; William Kaesche, Menlo Park, Calif.; Dr. Wendell Peacock, Oak Ridge, Tenn.; Randall Pratt, Beverly, Mass.; Douglas Root, Orlando, Fla., probably watching the Washington Senators training; Arthur Slemmons, Detroit, Mich.; James St. Germain, New Orleans, La.; Lester Simon, Washington, D.C.; Frederick Stearns, Attleboro, Mass.; Page Ufford, Niagara Falls, N.Y. I am pleased to find that several of the classmates are changing their affiliation status back to the Class of 1944, instead of the actual date of graduation. After all there is no class which can compare in spirit with the Class of '44. — WILLIAM B. SCOTT, *General Secretary*, 4829 Walwit Street, Dearborn, Mich. MALCOLM G. KISPERT, *Assistant Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.



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- 1.** Carries acid mine water for years with no maintenance expense due to internal corrosion.
- 2.** Minimizes "sulfur mud" deposits inside pipe walls.
- 3.** Reduces friction and permits greater flow of water thru the pipe.

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The installations pictured here are in a bituminous mine. Manhattan Rubber-Lined Pipe on the intake and discharge lines fortifies this pumping station against shutdowns for pipe maintenance. Costly replacement of corroded iron pipe has been eliminated.

The Manhattan Rubber-Lined Pipe stacked in inset is part of one of the earliest installations in this country. It has been in service in a large anthracite mine for over 12 years and will last many more years. Some mines estimate 20 years' service or more out of rubber-lined pipe, basing their estimates on periodic inspections of early installations over the past decade which have shown no noticeable wear.

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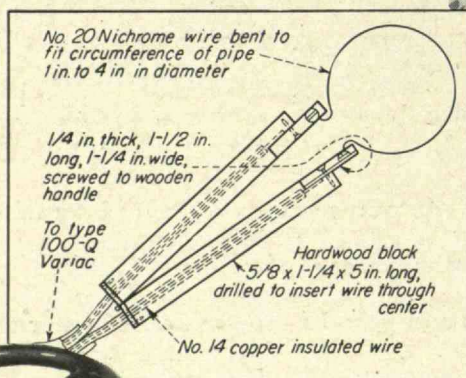


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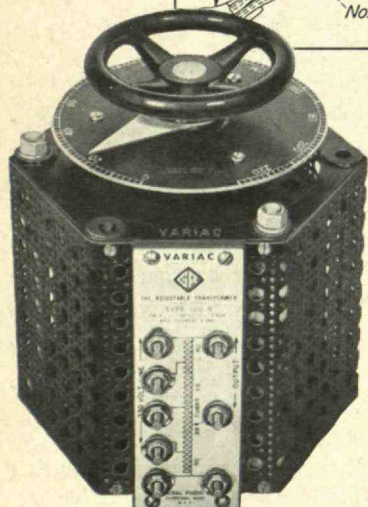
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